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A. F. W. PEART

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Canada's Sickness Survey

REVIEW OF METHODS

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SOUND public health practice can only be based on the needs of the people. It is with this principle in mind that public health and medical practitioners alike have realized the increasing need for accurate estimates of the nature and volume of sickness, in large and small populations, as a prerequisite for the intelligent planning of preventive or medical care programs.

In 1948, when the Canadian Parliament allocated \$30,000,000 a year for a National Health Grants Program to facilitate the extension of health and medical services in Canada, it was considered a logical step for the Federal Health Department to plan and carry out a National Sickness Survey, to determine the sickness load and health needs of the population. This Survey would provide the basis for intelligent spending of Health Grant funds, and such information is considered essential for the effective planning of both medical care and public health programs. A survey of this type and magnitude, however, could not be carried out without the co-operation and assistance of Provincial Health Departments. It was early in 1950 that Provincial authorities agreed to participate in a National Sickness Survey and to finance this survey under the National Health Grants program.

Although the primary purpose of the survey was to obtain accurate estimates of the volume of sickness in Canada, along with expenditures for medical care for a year, which could be used for medical care planning, it was also visualized that public health and medical practitioners in many spheres of activity in Canada would make much use of the data collected.

Background and Events Leading up to the Survey

The Department of National Health and Welfare first became involved in the practical aspects of collecting morbidity data through cooperating in a local

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survey of family sickness in the East York-Leaside Health Unit¹ in Ontario in 1948. During the first year of this survey various techniques were tried out in the collection of morbidity data and in obtaining and maintaining family cooperation. The following year the survey was applied to a random sample of the population and included approximately 250 families. Sickness data were mailed to the Health Unit by the families on a voluntary basis.

Through assisting in developing the techniques of this survey and in observing the field problems associated with conducting such a survey, Federal Health personnel gained much valuable experience. This knowledge was put to full use when the decision was made to conduct a sickness survey on a national scale.

Brief Orientation and Features of the Survey

Canada's Sickness Survey was composed of ten provincial surveys, which were organized separately, but had their overall planning, coordination and field direction by the Federal Health Department and the Dominion Bureau of Statistics.

Uniformity throughout the provinces was maintained in certain aspects through the use of standardized forms and instructions to enumerators. With certain minor variations in stratification, a similar sample design was set up to yield a probability sample, with a maximum sampling error of 20 per cent for events occurring at least once among every fifty persons in the population during a year.

The survey was based on a sample which consisted of approximately ten thousand households (forty thousand persons), which represented the population throughout the ten provinces of Canada. The survey was primarily designed to record all acute and chronic sickness for each household for one year.

The starting dates for the survey varied somewhat in different provinces, depending on the speed with which they organized. Four provinces commenced their surveys September 1, five on October 1, and one on November 1, 1950.

Trained enumerators visited the same households in the sample at monthly intervals and collected sickness and other data for a period of one year. Altogether fourteen visits were made by the enumerator to each household. The first visit was to introduce the survey, the twelve succeeding visits were to record the sickness experienced in the household, and a final visit was made to check and clarify the accuracy of information recorded during the preceding 12 months.

Verification of the informant's diagnosis was carried out in each province for a period of from one to two months, during which the lay statement of illness was checked with the physician's diagnosis. Altogether 2,635 illnesses were verified.

Two supplementary questionnaires were completed during the survey, one to determine the prevalence of permanent physical disabilities in Canada, for rehabilitation planning; and the other to learn what health services were desired but not obtained during the survey year.

Organization, Planning and Direction of the Survey

The organization, planning and direction of the survey at the Federal level was carried out by one or more committees composed of representatives from two Federal Government departments, the Department of National Health and

Welfare, and the Dominion Bureau of Statistics of the Department of Trade and Commerce.

Basically, the organization for the survey included a general Policy Making Committee and a Working Committee. It was the responsibility of the Working Committee in its initial stage to prepare forms, instructions, and other materials used in the conduct of the survey, to carry out field trials of the various records to be used, and to report at periodic intervals to the Policy Committee.

Once the survey was in progress, the Epidemiology Division of the Department of National Health and Welfare became the co-ordinating agency for the Working Committee, and was responsible for distribution of forms and materials to the provinces, answering enquiries, preparation of supplementary instructions for supervisors, and provision of technical personnel for field consultations.

The financial administration of the survey was the direct responsibility of the Directorate of Health Insurance Studies through their control of expenditures under the National Health Grants Program.

This Grants Program provided each province with the necessary funds to finance their portion of the Survey. Under the terms of this Grant it was the responsibility of each provincial health department to organize their part of the survey, by appointing a Sickness Survey Director, one or more supervisors, and a staff of enumerators. The administration, therefore, varied somewhat from province to province.

Record Forms

The forms used consisted essentially of three general records, "Household Record Card," "Individual Sickness Record," and the "Expenditure Form," as well as two supplementary records, "Supplementary Permanent Physical Disabilities Form," and "Form F—Health Services not Obtained."

The Household Record Card (see Appendix I) is a bristol board folder which contains basic household and environmental information and also acts as a "family folder" to hold the individual sickness and expenditure forms. When more than one family lived in a household, the various members in each family were all entered on one card. Additional cards were used, if required, and each family was identified by a bracket. The provincial crest was imprinted on the cards used in each province.

The Individual Sickness Record (see Appendix II) was designed to contain all the sickness data for each person for a year, including the details of each sickness he or she experienced. On the front of this form were recorded any hospital or medical care plans in which the individual was participating, also information on acute or chronic conditions that existed at the start of the survey and permanent physical impairments.

The inside of the form contained detailed questions about new, continued, or recurring sicknesses, along with days sick in bed, at home or in hospital, medical, hospital and nursing care, and any special treatments or procedures that were received for these sicknesses.

The back of the form was used for remarks in connection with illnesses recorded inside, and, as well, to provide additional information on the nature and cause of accidental injuries.

The Expenditure Card (see Appendix III) contained all the health expenditures for each family in the household, such as payments for hospital and medical care plans, doctors' fees, hospital bills and other special services, including drugs and appliances.

Several other administrative forms (A, B, C, D) were designed and used regularly in the field to enable us to keep track of the size of the sample, persons lost from or added to the survey, and the number of completed interviews each month. To systematize the reporting of the data and procedures used in the verification of diagnosis a standard form (Form E) was devised.

Within the limits of the sampling error, estimates from the survey will include:

- (a) The incidence and prevalence of illnesses with rates of occurrence greater than 2 per hundred persons per year.
- (b) The amount of medical care received during the survey.
- (c) Expenditures for health care during the year.
- (d) Total volume of sickness.

Then, as well, we will have information on the volume of disabling and non-disabling illnesses; those illnesses which received medical, hospital, or other care; and considerable data about the number and nature of sicknesses occurring amongst individuals and families in the survey.

Sample, Size and Design

The sample² for Canada's Sickness Survey was drawn from the population of private households in Canada, thus excluding Indian reserves, military centres, hospitals, other institutions, and hotels. Certain inaccessible areas such as the Yukon, Northwest Territories, and Labrador were excluded by design. The size of the sample for the Sickness Survey was of primary importance. Lacking precise information on the incidence rates of sickness in Canada, it was decided to define implicitly those sicknesses for which estimates of the amount of hospitalization, the number of doctors' calls, the incidence rates, etc., would be obtained. The sample size was determined in order to obtain these estimates, within a sampling error of 20%, for sicknesses whose rates of occurrence would be more frequent than once in fifty persons per year.

Six domains of study were established: (a) The Province of Ontario; (b) The Province of Quebec; (c) The Province of British Columbia; (d) The Province of Newfoundland; (e) a Maritime Region including the provinces of Nova Scotia, New Brunswick, and Prince Edward Island; (f) a Western Region including the provinces of Manitoba, Saskatchewan, and Alberta. Within each domain of study, "area sampling" was used in the selection of the household sample.

Size and Distribution of the Sample

The sample size in each domain of study was approximately the same, and 20% loss of the sample was visualized during the survey year.

Within each province or region the metropolitan centres were sampled separately, while the remainder of the province was divided into basic strata comprised of primary sampling units (P.S.U.'s). Each stratum was sub-divided into three

substrata, while the other two comprised the rural substrata. The size of the P.S.U.'s within the rural substrata was between 2,000-4,000 persons. One unit was selected with "probability proportional to size," from each substratum.

One variation of interest in the size of the sample was carried out in the Swift Current Health Region in Saskatchewan, where the sample was increased to equal that of the rest of the province, so that comparisons might be made on the incidence of disease and the medical care received in this region, and the rest of the province. The Swift Current Health Region³ has had a medical care and hospital program since 1946 whereas the entire province⁴ began its compulsory hospitalization plan in 1947.

Changes in Sample Composition

Since it was expected there would be changes in the sample from month to month, both from non-cooperation or the inability of the enumerator to visit or contact the household, provincial directors were asked to complete and forward a special form (Form D) to Ottawa each month to show the changes in the Sample Composition. This form included the number of households interviewed each month in various primary sampling units, along with reasons why some of the households were not contacted.

The overall refusal rate was 4.0 at the start, and 5.4 at the end of the survey. This rate varied in different provinces, the lowest at the end of the survey being 0.4%, and the highest 10.1%. For the most part, the highest rate occurred in metropolitan areas. This overall refusal rate was lower than had been expected. A number of vacant households, or lots, which were selected in the sample and retained in the survey, also accounted for approximately 5% of the total sample. Therefore about 90% of the households in the overall sample were actually visited each month during the year. (See Table I.)

DISTRIBUTION OF SAMPLE HOUSEHOLDS BY PROVINCES SHOWING
SAMPLE COMPOSITION AT START AND END OF SURVEY
CANADA'S SICKNESS SURVEY 1950-51

PROV- INCE	Initial Dwellings Selected	Households Visited and Interviewed.**		Refusal Rate %		Persons in Household Visited and Interviewed		Households Visited*** but NOT Interviewed for Various Reasons	
		Start	End	Start	End	Start	End	Start	End
Nfld.	1,243*	1,136	1,143	1.5	1.7	5,703	5,701	1	2
P.E.I.	441	406	402	1.2	2.0	1,725	1,680	0	0
N.B.	584	538	526	0.4	1.3	2,561	2,466	5	3
N.S.	720	670	660	1.3	2.0	2,907	2,772	12	13
Que.	1,307	1,216	1,230	3.3	4.4	5,520	5,595	15	11
Ont.	1,676	1,441	1,421	7.3	10.0	5,517	5,350	52	15
Man.	462	313	410	3.0	4.6	1,530	1,504	15	7
Sask.	753	678	673	0.4	0.4	2,679	2,648	25	17
Alta.	565	459	453	0.8	2.3	1,688	1,658	61	31
B.C.	2,198	1,862	1,854	8.2	10.1	6,483	6,543	98	18
TOTAL	9,949	8,819	8,772	4.0	5.4	36,316	35,917	284	117

*6 unlocated.

**This figure represents the number of dwellings selected, minus refusals of households to co-operate and uninhabited dwellings and dwellings under construction.

***This figure represents the number of households where persons were temporarily absent, or the occupants could not be located at time of visit.

Selection, Employment and Training of Supervisors and Enumerators

Although the general pattern for the selection and training of supervisors and enumerators was outlined by the Federal Health Department and standardized aids were provided, each province assumed the direct responsibility for the selec-

tion and training of their field staffs. Ten provincial sickness survey directors were appointed, nine men and one woman, some of whom were on a full-time basis, and others part-time. In addition, a regional director and a regional supervisor were appointed for the Maritime region. Each province had one or more full-time supervisors. Altogether there were fifteen full-time supervisors and six part-time supervisors throughout the country. These included five female and ten male full-time supervisors and three males and three females part-time. The province of British Columbia used their regular public health nursing staff as enumerators. Therefore public health nursing supervisors automatically came into the survey on a part-time basis when households were selected in their areas.

In most cases enumerators were selected by the provincial supervisors. The minimum qualification of any enumerator was a high-school education, with preference given to persons having a teaching or nursing background.

The number of enumerators per province ranged from 12 to 128, depending on each provincial organization. The number of households per enumerator varied from 1 to 150, with an average of about 30-40 for part-time and over 100 for full-time enumerators. A total of 388 enumerators, of whom 9 were full-time and 379 part-time, were employed for the duration of the survey.

Remuneration for full-time enumerators ranged from \$150 to \$200 per month, while that for part-time enumerators ranged from 90c to \$1.00 per household visited. Some provinces paid 50c for each vacant dwelling investigated. In all cases enumerators were reimbursed for travel expenses incurred.

The training period for enumerators varied somewhat, and was partly dependent on the ingenuity of provincial survey directors and the accessibility of the enumerators. For the most part, the director or supervisor discussed the forms and instructions with the enumerators, either in groups or individually, and periodically visited the enumerators. Refresher courses were also carried out during the year. Several sample forms, properly filled out as examples, and covering a variety of sickness experiences, were provided by federal authorities. A combination checking and training visit was made by the supervisor or director at monthly intervals or as frequently as possible.

Both federal departments participating in the survey provided technical assistance to survey directors in the selection, training and supervision of enumerators.

Enumeration Methods and Problems

The enumeration method used in the survey consisted primarily of a personal interview with the informant, who was usually the housewife. The first visit of the enumerator was to explain the purpose and importance of the survey to the household informant, and to request their co-operation during the survey. In most provinces an introductory letter had been received by the householder announcing that an enumerator would call. Enumerators were asked to stress the point that all information would remain confidential. An attractive household calendar was left during the first visit, and, when possible, was posted in a conspicuous place in the home. This calendar was designed to assist the informant in keeping a detailed record of current sicknesses and expenditures for each

member of the household, from month to month. On the whole, it is believed that calendars were of value in keeping a more accurate record of dates of onset and duration of sicknesses. The question on family income was asked at the end of the survey, at which time the family was expected to be most co-operative.

In cases where enumerators were unable to visit households because of weather or road conditions, they were asked during the next visit to record sickness data for a two-month period. Occasionally additional information was also collected by mail or telephone. One of the chief problems encountered by some enumerators was travel difficulties. As well as using regular means of transport, it was sometimes necessary for supervisors and enumerators to employ less convenient means such as a snowmobile, dog team, or horseback, or travel on foot to get to their destination.

Verification of Diagnosis

In sickness surveys,⁵ where information is collected by lay enumerators from lay informants, it is desirable to have some measurement of the accuracy of the diagnosis obtained. In the present survey this verification procedure was carried out at the provincial level for a specific period of time. Some of the provinces were able to verify illnesses for a two-month period, while others completed a similar study for only one month. All illnesses that had received medical attention during these specified periods were submitted to the physicians concerned for their statement or diagnosis of each particular illness.

A total of 3,001 illnesses were verified in all provinces. This verification was carried out by questionnaires, personal contact, telephone or by checking with hospitals or medical care records. Of these, 167 (5.6%) did not receive the consent of the informant. Of the remaining 2,834 illnesses, physicians refused to cooperate in 140 cases (5.0%) and 59 illnesses were not verified for other reasons. Thus 2,635 (87.8%) illnesses were actually verified and there was approximately 80% agreement between the lay statement of illness and the physician's diagnosis.

As far as possible the diagnosis of the informant and of the physician were recorded independently, so that the physician would not be influenced by the lay diagnosis. In all instances, provincial and local medical societies gave their co-operation in carrying out this procedure.

Methods Employed to Stimulate Interest of Enumerators and Families

Considerable importance was attached to the need for maintaining the interest of the enumerators in the survey, as it was realized that they would pass their enthusiasm, or lack of enthusiasm, on to the household informant. As thorough a grounding as possible into the reasons and purpose of the survey was given during the initial training period so that enumerators would do a better selling job to the householder. It was also necessary to constantly review the purpose and objectives of the survey with the enumerator to refresh his memory, as he in turn was often asked the same questions by the household informant during return visits to the home. The most effective single means of stimulating and maintaining the interest of enumerators was by the personal contact of survey directors or supervisors through their frequent visits, telephone conversations or letters.

Methods used to secure and maintain family interest at the start and throughout the survey year included newspaper and radio announcement and reviews, special news letters and monthly provincial publications containing sickness survey news. In some provinces arrangements were made to have Christmas cards sent to all households. These cards were usually signed by the enumerators and were very well received.

Cost of the Survey

The cost of any prospective survey is always an important consideration, and often the estimated cost and the final cost are two entirely different figures. The total cost of the Sickness Survey in Canada, including Health Grants to the provinces, as well as expenditures by federal government departments for supplies, salaries and travel, will likely be in the neighbourhood of \$500,000. Of this amount, approximately \$332,900, of Health Grant funds, had been expended by the provinces up to April, 1952. The final cost of the survey, including the cost of the coding and tabulating procedures, will not be known for some time.

Supplementary Surveys

As mentioned above, two supplementary surveys were carried out in association with the Sickness Survey.

The purpose of the first was to obtain estimates of the number of persons having permanent physical disabilities in Canada, if possible the nature of these disabilities, and the employment status and source of income of those disabled. This information was considered essential for the National Rehabilitation Planning Committee which has been formed jointly by the Department of National Health and Welfare and the Department of Labour.

A special questionnaire, "Supplementary Permanent Physical Disabilities Form" (Appendix IV), with the instructions for use on the reverse side, was supplied to enumerators through provincial survey directors and was completed during the month of September in all provinces. The disabilities recorded consisted of conditions that existed at the start of the survey, as well as new disabilities which occurred up to and including the month of September. Mental illnesses, as well as errors of refraction, where glasses were required, were excluded from the survey. As yet these data have not been coded and tabulated.

The second supplementary survey was planned as a public opinion poll during the final visit to the household, to learn if the participating families had received all the health services they had desired during the survey year.

A special "Form F—Health Services Not Obtained" (Appendix V), with instructions for use printed on the reverse side, was only completed by enumerators in cases where further health services had been desired for illnesses during the year but had not been obtained. Enumerators were instructed to review with the informant all illnesses that had occurred during the year and to determine if any additional health services had been desired but not obtained.

It was anticipated that some of the reasons for not receiving health services would include the lack of medical or hospital facilities near at hand, difficult travel conditions, or lack of funds to purchase these services.

It should also be pointed out that this special survey was based on the opinion

of the individual concerned. The services which the informant wished are not necessarily those which would be considered necessary according to medical opinion.

DISCUSSION

The chief problem in the Sickness Survey, from a federal point of view, was maintaining uniform survey procedures in ten autonomous provinces, each of which had its own funds, organization, and problems. It would have been much easier to plan and conduct a national survey had the entire administrative organization, including the financing, selection and training of supervisors and enumerators, been carried out at federal level. It was also difficult in some provinces for survey directors to obtain suitable field staff. This applied particularly to full-time personnel, as few well qualified or capable individuals were willing to accept temporary positions which offered little security. However, the use of part-time enumerators often resulted in the hiring of excellent personnel who were interested in a little extra gainful employment. The scattered distribution of the sample was also a disadvantage in the selection of enumerators as well as in their training and supervision.

In planning a sickness survey, one should always be cognizant of the various sources of error involved so that when the data are finally tabulated and analyzed the statistics will be interpreted with due caution. Sickness surveys of this kind are only designed to give broad estimates of disease incidence, prevalence or other data, which can be used either for planning health programs or as a basis for more intensified studies on specific disease problems.

In reviewing various sources of error in a sample survey, one immediately thinks of the sampling error. In this survey the sampling error for events occurring twice per 100 population, per year, was set at 20%.

The selection of the sample may also provide an error in the sample composition, and it is, of course, important to obtain the assistance of a sampling expert when designing and selecting the sample.

There will also be considerable error from the bias of both the enumerator and the informant. The enumerator may misinterpret or give his own interpretation of the illness rather than that of the informant. The enumerator may also make a variety of mechanical errors when recording the information on the questionnaire forms. There are many reasons why such errors may be made. For instance, the enumerator may be dishonest, intentionally or otherwise; he may be tired, or in a hurry, have other things on his mind, or may be just careless.

The informant may not wish to co-operate fully with the enumerator and may intentionally give false information, partial information, or no information at all. Some informants go to the opposite extreme and extend themselves in trying to please the enumerator with imaginary illness. It, therefore, largely rests with the honesty, accuracy and interest of both enumerator and informant, in obtaining a true picture of sickness as it occurs in family groups.

A further source of error is in the coding of the collected data, particularly when the sicknesses have been given in lay terms. There is always the danger that the coder will attempt to speculate on the nature or cause of illness, and thus make an error in coding ill-defined conditions as specific causes or diseases. It is

of paramount importance for coders to remember the source of these data and code them with caution.

Another coding pitfall will occur if all respiratory symptoms occurring at the same time are recorded separately, in which case the tabulations will be over-weighted with a volume of symptoms which do not represent sickness experiences. In attempting to overcome these difficulties, it has been our policy to group respiratory symptoms which occur at the same time into one illness experience, and also to code, where possible, the principal cause of illness when multiple and unrelated symptoms are recorded at the same time.

Today, more than ever before, there is a growing need for sickness survey techniques in public health practice. Health officers are realizing more and more the need for defining and evaluating their major health problems as a basis for planning dynamic health programs. Using this approach, it is possible for them to direct their program into those health fields which account for the greatest volume of morbidity, mortality, and permanent disability.

NOTE: This review of methods used in Canada's Sickness Survey includes only the major procedures carried out during the survey, and omits much of the detail and many observations on methodology. These will be discussed in subsequent publications.

ACKNOWLEDGMENT

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APPENDIX I
HOUSEHOLD RECORD CARD

A. HOUSEHOLD DATA

[illegible]

B. ENVIRONMENT

1. *Living Accommodation*
Total rooms occupied by household _____ Total persons in household _____
Need of repair—Roof ☐ Walls ☐
2. *Home Accessories*
(Indicate only those available to all members of the Household or owned by the family of the Head of the Household)
Vacuum Cleaner ☐ Washing Machine ☐ Telephone ☐
3. *Refrigeration*
Mechanical ☐ Ice ☐ Root cellar or equivalent ☐
If refrigeration is not available for use by all members of the household describe arrangements in effect

4. *Heating*
Furnace ☐ Stove ☐ Space heater ☐ Fireplaces ☐
5. *Drinking Water*
Water under pressure ☐ Water Chlorinated ☐
Source—Well ☐ Spring ☐ River ☐ Lake ☐
6. *Sanitary Facilities*
Flush Toilet ☐ Chemical toilet ☐ Outdoor Privy ☐
Bathtub or shower ☐ Washbasin ☐ Kitchen sink ☐
7. Is all milk used pasteurized? Yes ☐ No ☐
8. REMARKS _____

[illegible]

APPENDIX IV
SUPPLEMENTARY PERMANENT PHYSICAL DISABILITIES FORM

Date.....

Household Number ☐☐☐☐ ☐☐☐☐☐ Individual's Number ☐☐
Date of Birth..... Sex.....

1. *Permanent Physical Disability(ies):*

(a) *Nature and Description of disability(ies):*.....
.....
.....
.....
.....

(b) *Duration of Disability(ies)*

	Duration	
Disability (ies)	Years	Months
(i).....		
(ii).....		
(iii).....		

2. *Employment Status*

- (a) Is disabled person gainfully employed (Yes or No).....
- (b) If so, is the employment
☐ full time
☐ part time
☐ occasional
- (c) If disabled person is not gainfully employed on a full time basis, indicate whether
☐ seeking full time employment
☐ a housewife
☐ in school or learning a trade
☐ unable to be fully employed because of disability
☐ unable to be employed at all because of disability
☐ not seeking gainful employment for any other reason

3. *Source of Income*What are disabled person's *sources* of income

- ☐ self, from employment
- ☐ self, from own resources
- ☐ family or relative
- ☐ voluntary agency(ies), (state name of agency(ies))

- ☐ government agency(ies) (specify whether local relief, old age pension, blind pension or other type of social assistance)

- ☐ other sources (specify)

Date.....

Additional Information to Clarify Description of Disability(ies)

Add further pertinent information. Where not already given, include answers to the following questions with respect to *each* disability:

- (i) What is the condition or disease?

(ii) How (if at all) does it

(a) interfere with ability to work?

(b) affect ability to get along in every day functions?

Other information

APPENDIX V

FORM F - HEALTH SERVICES NOT OBTAINED

Complete this form only if a person had sicknesses for which all services desired were not obtained. If no types of services desired, write "Form F Negative" on the inside upper left-hand corner of the Individual Sickness Record.

SECTION I - Indicate in the appropriate column, if any of the following services were desired but not obtained, either in part or in full, for any of the sicknesses on the Individual Sickness Record.		Household No.	Indiv. No.	Indiv. S.N.
If so, indicate why not?		Name		
A. Physician's Service				
1. Indicate type of service not obtained (Home, office, out-patient clinic)				
2. Why not obtained?				
B. Home Nursing Services				
1. Indicate type of service not obtained.				
2. Why not obtained?				
C. Hospitalization (In-patient care)				
1. If desired, why not obtained?				
D. Operations				
1. Indicate type of operation.				
2. Why not obtained?				
E. Other Health Care				
1. Indicate type of care, (Specify - include dental, glasses, etc.)				
2. Why not obtained?				
F. Conditions at Start of Survey	<u>Sickness</u>	<u>Service Desired</u>	<u>Why not obtained</u>	
1. Indicate type of services desired (as above) for sickness in Item 5 of I.S.R.				
2. Why not obtained?				
SECTION II	a) Re illnesses during year			
Supplementary Inquiry	1. What type of service?			
(See Instructions)	b) Re conditions in Item 5 of I.S.R.	<u>Sickness</u>	<u>Service Desired</u>	
	1. What condition?			
	2. Give type of service for each condition.			

- 8 Indiv.S.R. Individual Sickness Record.

(PLEASE READ INSTRUCTIONS ON REVERSE SIDE)

The Welland and District Dental Health Program

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UNDER the dental health program sponsored by the Ontario Division of the Canadian Red Cross Society in Welland County Health Unit¹ in 1946, it was planned that through education both the public and the dental profession might broaden their understanding of the contribution of dentistry as a health service. The dentist was to be reminded that he had a share in the responsibility for the health of the people and that the demand for socialized dental services could only be offset by assuming this responsibility. The public were to be told of the advantages of a healthy mouth and shown that much of the expense and discomfort of dental disease could be eliminated by early treatment, and that they could reduce their dental troubles by applying a few simple preventive measures. It was also planned to assess the tangible results of the program as might be reflected in the rate of occurrence of new dental defects and in the number of neglected mouths. It was not felt that the program was the entire answer to dental health problems; it was to be an experiment in an important phase of dental health service which had been previously neglected.

Objective

The object of this investigation was to learn something about the trends in dental health conditions of the area and to determine the effectiveness of the program at various ages so that the activities of the Dental Officer might be intelligently directed into the most fruitful fields.

Source and Quality of Data

The data used in this study were extracted from the records kept by the Welland County Health Unit Dental Officer, Dr. L. Honey, who examined yearly the mouth of each child of public-school age and some of high-school age in the Welland County Health Unit. His findings were recorded by an assistant on large diagrammatic charts. The various calendar years when the examinations were made were identified by coloured pencils. This made it possible to tell when a child entered the program and in which years he was examined. A preliminary

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1. Sturgeon, L. W. C., *Dental Public Health*, J.C.D.A., 1949, 15: 625.

study of the records as compiled for all the children by the health unit staff revealed the presence of certain uncontrolled variables (Appendix I*).

In contrast to the ease of procuring data on heights and weights, it is difficult for the examining dentist to maintain a clear-cut definition of a dental cavity, because cavities vary from microscopic size to those destroying the whole crown of the tooth. The assessment of criteria such as oral hygiene, which is classified as good, fair, or poor, cannot be too reliable without some measure of the precision and constancy of the examiner's judgment. To ensure high reliability it should be possible for independent observers (or a single observer upon repetition) to ascertain the presence or absence of any measure or characteristic with high agreement. Unconscious subjective influences such as gradual refinement of examination techniques, an acquired tolerance for certain defects, or even bias resulting from desire to be unbiased are almost always present in data such as these. For this reason the ordinary tests of significance cannot always be considered applicable.

SCOPE AND METHOD OF ANALYSIS

In compiling observations from the dental record charts for this study, an attempt was made to choose criteria based on actual observations in the mouth instead of information gained by questioning the child. The criteria chosen and their purposes are given as follows:

1. *Dental Caries Prevalence*

The percentage of children having no open cavities, no fillings, and no teeth lost or needing to be extracted. This was based on both the permanent and deciduous dentitions. A score of the number of tooth surfaces affected by caries per child such as compiled in the D.M.F. or d.e.f. rate would have been desirable but could not be obtained from the dental record charts.

2. *Dental Treatment*

- (a) Average number of untreated carious surfaces on the deciduous and permanent teeth.
- (b) Percentage of children who needed fillings or extractions and who had them completed.
- (c) Percentage of children needing space maintainers and having them in position.
- (d) Percentage of children needing fillings or extractions but who had no evidence of such in their mouths.
- (e) Percentage of children needing and receiving orthodontic treatment.

3. *Tooth Loss*

- (a) The percentage of children having one or more deciduous teeth prematurely lost or to be lost.
- (b) The percentage of children having one or more permanent teeth lost or to be lost.

4. *Need for Space Maintainers*

Percentage of children needing space maintainers.

5. *Need for Orthodontic Services*

Percentage of children having abnormal occlusion: that is, abnormal cuspid and molar relationships, drifted teeth, and anterior or posterior cross-bites.

6. *Oral Hygiene* (classified according to good, fair, poor)

- (a) Percentage of children having good oral hygiene.
- (b) Percentage of children having poor oral hygiene.

7. *Gingival Conditions*

Percentage of children having any or all of simple gingivitis, hyperplastic gingivitis or Vincent's infection.

*The appendices submitted with this article discuss the extra variables superimposed on the original project's design. Sampling procedure and statistical analysis used in this report are included in the reprint, which is available by writing to the Canadian Public Health Association, 150 College Street, Toronto 5, Ontario.

The definitions of the above terms were taken as given in the survey précis prepared by the Ontario Dental Association in connection with the Ontario Health Survey of 1949.

The data presented relate to a random sample of 1,239 native-born children followed over the portion of the five-years' program for which they individually attended public school (Appendix I).

Such changes as are observed in this group are not proportionately applicable to the whole child population of the health unit because the effectiveness of the program is diluted by the movement of families in and out of the area.

No attempt has been made in this study to evaluate the impact of the program on the attitude of the local people toward dental health, but any tangible improvement in observed dental conditions might well imply improvement in the interest of the public.

The change in certain of the recorded characteristics was so great over the five-year period studied that tests of significance are almost superfluous. For other conditions, where the measure was rather subjective and the trends are not too pronounced, the results of the tests are best interpreted in the light of the consistency of these trends at various ages.

The method of testing the significance of any apparent trend is given in Appendix II. In these tables 0.0 signifies a percentage less than .05 and sometimes 0.

FINDINGS

Dental Caries Incidence or Prevalence

Since the method of recording was varied during the study, D.M.F. or d.e.f. rates were not reliable and were not used in the analysis. It was possible, however, to compile figures on the proportions of children at each year of age who had no cavities, no fillings, no teeth lost or needing extraction in either dentition (Table I).

TABLE I
PERCENTAGE OF CHILDREN HAVING NO CAVITIES, NO FILLINGS, AND
NO TEETH LOST OR NEEDING EXTRACTIONS
(Permanent and Deciduous teeth)

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5*	19.83	15.56	25.48	31.06	22.09
6*	5.94	13.34	11.40	15.53	18.13
7*	.98	3.41	7.81	6.38	11.97
8	1.18	2.08	3.26	4.17	2.69
9	1.39	0.0	4.17	2.25	4.67
10	1.59	1.56	0.0	3.19	2.38
11	1.43	0.0	1.59	2.99	2.13
12	1.82	1.54	3.45	0.0	7.46
13	0.0	2.04	1.82	1.96	0.0

*Trends are significant at these age levels.

Note: Percentages going diagonally from upper left to lower right are presumably based on the same group of children at intervals of one year. Incompatibilities in the lower portion of the table are due to absenteeism.

More children are apparently untouched by dental decay at the end of the five-year program than there were at the time when it began. As one would expect with a disease whose lesions are cumulative, the greatest effect is shown in the early ages.

Dental Treatment Care

The average number of carious surfaces needing restoration are shown for each specific age group in Table II.

TABLE II
AVERAGE NUMBERS OF UNTREATED CARIOUS SURFACES ON THE DECIDUOUS AND PERMANENT TEETH OF WELLAND SCHOOL CHILDREN

Dentition	Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
DECIDUOUS	5	3.44	3.17	3.04	2.99	2.71
	6*	4.71	3.09	2.77	2.65	2.44
	7*	5.12	2.76	2.61	2.20	2.19
	8*	3.87	3.09	1.60	1.68	1.87
	9*	1.88	1.95	1.79	.79	.74
PERMANENT	5*	.31	.12	.08	.16	.07
	6*	1.15	.65	.44	.47	.34
	7*	1.89	1.69	1.18	1.00	.89
	8*	2.94	2.06	1.29	1.42	1.12
	9*	3.13	2.42	1.54	1.56	1.32
	10*	3.49	2.14	2.07	1.65	1.44
	11*	4.74	3.50	1.78	2.55	1.39
	12*	5.15	3.79	1.97	1.98	1.51
	13*	5.25	3.63	4.13	2.35	2.44

*Trends are significant at these age levels.

For both dentitions, there is a general decline in the number of untreated carious surfaces per child. The amount of operative dentistry still required at the end of the experiment in any age groups, except the 5-year-olds, is less than half what it was at the outset.

TABLE III
PERCENTAGE OF CHILDREN NEEDING FILLINGS OR EXTRACTIONS BUT WHO HAVE NO EVIDENCE OF SUCH IN THEIR MOUTHS

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	74.19	57.89	59.83	72.97	58.21
6	57.89	53.85	43.86	44.12	52.67
7	31.68	31.76	39.83	30.11	32.00
8*	55.95	47.87	17.98	27.83	24.31
9*	49.30	41.89	35.87	13.79	24.51
10*	53.23	31.75	20.88	25.27	10.98
11*	49.28	34.48	13.33	13.85	25.00
12*	27.78	34.38	16.13	12.70	6.56
13*	55.10	27.08	14.29	14.00	3.51

*Trends are significant at these age levels.

The data in Table III show the proportion of children needing operative care but showing no evidence of ever having received any.

No significant change in the proportions of these dentally neglected children is apparent until 8 years of age, but in the older years the proportions of these children are markedly reduced.

TABLE IV
PERCENTAGE OF CHILDREN WHO NEEDED FILLINGS OR EXTRACTIONS AND WHO HAVE THEM COMPLETED IN BOTH THE PERMANENT AND DECIDUOUS DENTITION

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	2.15	8.77	18.80	13.51	8.96
6	2.11	5.98	14.62	16.91	22.14
7	2.97	9.41	11.01	10.80	13.60
8*	4.76	3.19	19.10	15.65	16.57
9*	7.04	10.81	14.13	25.29	29.41
10	1.61	11.11	15.38	29.67	35.37
11	1.45	6.90	26.67	27.69	39.13
12	3.70	7.81	22.58	28.57	45.90
13	2.04	4.17	10.71	28.00	33.33

*Trends are significant at these ages.

At the beginning of the study it was uncommon to find children whose operative dentistry was completed. At the end of the five years in the older ages the number of children lacking no fillings or extractions whatsoever was in the order of 1/3 (Table IV). It is obviously more desirable for the children to maintain their teeth in perfect condition than to receive only the treatment which is urgent.

Tooth Loss

The percentage of individuals who have one or more teeth beyond repair has been used as the index of tooth loss. The actual number of teeth lost is of secondary importance because it requires only one tooth prematurely lost to create potentially an individual who needs a space maintainer or who will need future orthodontic care.

TABLE V
PERCENTAGE OF CHILDREN HAVING ONE OR MORE DECIDUOUS TEETH PREMATURELY LOST OR TO BE LOST

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	22.41	20.00	16.56	21.12	24.42
6	46.53	37.04	32.64	44.10	35.63
7	48.04	59.09	50.00	45.74	48.59
8*	62.35	56.25	59.78	50.83	47.31
9*	51.39	52.70	46.88	38.20	38.32
10	31.79	35.94	34.67	31.91	20.24

*Trends are significant at these ages.

TABLE VI
PERCENTAGE OF CHILDREN HAVING ONE OR MORE PERMANENT TEETH
LOST OR TO BE LOST

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	1.72	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.06
7	0.0	0.0	3.91	1.06	2.82
8	17.65	1.04	6.52	10.83	2.69
9	18.06	21.62	4.17	10.11	14.02
10*	15.87	28.13	28.00	6.38	17.86
11	37.14	20.69	34.92	35.82	8.51
12*	61.82	44.62	31.03	38.10	34.33
13*	57.14	69.39	56.36	49.02	40.35

*Trends are significant at these ages.

Tables V and VI show the trends in percentages of individuals with one or more lost teeth. There is little, if any, reduction in deciduous tooth loss until 8 and 9 years of age. Probably this is because the teeth are too bad to be repaired before the children come under the influence of the program. Significant reductions in permanent tooth loss are also evident, particularly in the older ages.

Malocclusion and Space Maintainers

Malocclusion and the need for space maintainers are largely reflections of the loss of teeth. There is apparently a significant decrease in cases of abnormal occlusion over the period of the study (Table VII).

TABLE VII
PERCENTAGES OF CHILDREN HAVING ABNORMAL OCCLUSION

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	19.83	8.89	1.27	4.35	5.81
6	10.89	13.33	4.15	1.86	3.75
7	15.69	13.64	12.50	6.38	7.04
8	24.71	21.86	21.74	12.50	7.57
9	36.11	29.73	12.50	20.22	14.02
10	39.68	43.75	29.33	11.70	16.67
11	44.29	50.00	39.68	32.84	6.38
12	69.09	60.00	39.66	41.27	32.84
13	71.43	71.43	63.64	35.29	36.84

Trends are significant at all ages.

The reduction in need for space maintainers is almost a duplication of the distribution of deciduous tooth loss on which it is dependent (Table VIII). Only at 5 years of age is the reduction not significant.

There are few individuals receiving space maintainers or treatment for malocclusion at any period of the dental health program (Tables IX and X).

TABLE VIII
PERCENTAGES OF CHILDREN NEEDING SPACE MAINTAINERS

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	13.8	18.5	12.7	13.0	14.0
6*	38.6	29.6	21.2	26.7	21.9
7*	37.3	51.1	29.7	35.6	31.7
8*	43.5	42.7	39.1	30.0	27.6
9*	22.2	35.1	12.5	14.6	1.9

*Trends are significant at these ages.

TABLE IX
PERCENTAGES OF SPACE MAINTAINER NEED MET

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	6.3	0.0	0.0	4.8	0.0
6	2.6	2.5	4.9	7.0	5.7
7	2.6	4.4	2.6	6.0	8.9
8	2.7	0.0	5.6	2.8	3.9
9	0.0	0.0	0.0	7.7	100.0

TABLE X
PERCENTAGES OF CHILDREN WHO HAVE MALOCCLUSION AND ARE GETTING
ORTHODONTIC CARE

Year Age Last Birth	1946-47	1947-48	1948-49	1949-50	1950-51
5	0.0	0.0	0.0	14.2	0.0
6	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0
11	0.0	3.4	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	4.8

Oral Hygiene and Gingival Conditions

The marked decrease in individuals having poor hygiene and the complementary increase in individuals with good oral hygiene are shown in Tables XIa and XIb.

TABLE XIa
PERCENTAGES OF CHILDREN HAVING POOR ORAL HYGIENE

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	22.41	.74	0.0	0.0	0.0
6	4.95	0.0	0.0	0.0	0.0
7	7.84	2.27	.78	0.0	0.0
8	15.29	13.35	1.09	0.0	0.0
9	23.61	6.76	2.08	0.0	0.0
10	36.51	7.81	5.33	1.06	0.0
11	24.29	8.62	4.76	1.49	1.06
12	49.09	6.15	5.17	1.59	0.0
13	12.24	8.16	3.64	0.0	1.75

Trends are significant at all ages.

TABLE XIb
PERCENTAGES OF CHILDREN HAVING GOOD ORAL HYGIENE

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	5.17	6.67	33.12	40.99	58.14
6	3.96	2.96	20.21	41.68	52.50
7	.98	1.14	13.28	25.53	42.96
8	0.0	0.0	7.61	18.17	32.97
9	0.0	1.35	5.21	14.61	22.43
10	0.0	0.0	12.00	6.38	25.00
11	1.43	3.45	4.76	8.96	9.57
12	1.82	1.54	8.62	7.94	20.90
13	2.04	2.04	9.09	13.73	21.05

Trends are significant at all ages.

Table XII indicates a decrease in the individuals having any or all of simple gingivitis, hyperplastic gingivitis, and Vincent's infection.

TABLE XII
PERCENTAGES OF CHILDREN HAVING ANY OR ALL OF GINGIVITIS SIMPLEX
AND HYPERPLASTIC GINGIVITIS

Year Age Last Birthday	1946-47	1947-48	1948-49	1949-50	1950-51
5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0
7	1.96	1.14	.78	0.0	0.0
8*	7.06	3.13	0.0	.83	0.0
9	2.78	5.41	2.08	0.0	.93
10	6.35	4.79	8.00	3.19	0.0
11*	22.86	12.07	6.35	8.96	2.13
12	12.73	12.31	10.34	6.15	5.97
13*	18.37	18.37	16.36	7.84	3.51

*Trends are significant at these ages.

Child Patients in the Regional Private Dentists' Offices

A random selection of four weeks (from the calendar year 1951) was made. The nine local dentists were asked to give the number of child patients in their offices on the days of these weeks. The distribution of child patients per full working day (pooling all returns) is given in Table XIII. It should be noted that there were few dentist days when no children were seen. The average number of child patients was about 5 per day, which was significantly greater than the 1-2 per day receiving treatment at the beginning of the program. On only 25% of the working days did a dentist see more than 7 children. It is probable that this figure represents a limit to the amount of time a dentist can devote to children and still maintain his obligation to the adult population.

TABLE XIII

DISTRIBUTION OF THE NUMBERS OF CHILD PATIENTS PER DENTIST DAY FOR THE WEEKS OF FEB. 19-25, MARCH 19-25, AUG. 13-19, AND DEC. 10-16, IN THE PRIVATE DENTAL OFFICES OF THE WELLAND DISTRICT

Number of Children Per Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Frequency of Occurrence in the Sampling	4	8	20	33	25	21	14	15	17	11	5	2	3	1	0	2	22

Mean—5.24 children per day.

Standard Error of mean .233

In the Welland Health Unit there are some 6,000 children under 14 years of age. On a basis of a 200-day working year for the 9 dentists, 6 child patients each per day would allow every child to have 2 appointments a year.

DISCUSSION

In the last analysis it is necessary to decide, even if differences are proven statistically significant, whether they are practically significant. Are the observed changes expensive or are they cheap when balanced against the cost in time and money?

These questions cannot be answered without prolongation of the experimental program and further study. At this early stage it may be sufficient to see that trends are being established and maintained. It is obvious that such factors as a reduction of tooth loss can only be observed in new generations. Major reductions in malocclusions which result from tooth loss can only be shown when the new generations reach late school age.

It is natural that the educational program would not influence the transients to the same extent as constant residents of the area. While this would decrease the effectiveness of the program in a circumscribed area, it should become less important when more of the province is receiving similar education.

SUMMARY OF FINDINGS

1. *Dental Caries Prevalence*

There appear to be more individuals who show no cavities, fillings, extractions, or need of extractions in either the deciduous or permanent dentition in the later years of the program than in the initial years.

2. Dental Treatment

(a) There are less than one half as many unfilled cavities at the end of the period studied in all but the two youngest age groups.

(b) At all ages there is a significant increase in the proportion of children who have their dental treatment completed.

(c) In the older ages particularly there is a complementary decrease in the proportion of children who have apparently never received any treatment.

3. Tooth Loss

(a) The reduction in the proportion of children who have one or more deciduous teeth lost or to be lost is not of significance in this sample until the ages of 8 to 10.

(b) There is a reduction of the number of individuals who have lost or need the extraction of a permanent tooth.

(c) The saving of teeth is reflected in a decreased need for space maintainers or orthodontic care.

4. Oral Hygiene and Simple Gingival Conditions

There is an improvement in oral hygiene accompanied by a decrease in simple gingival affections.

5. The private dentists in the region have co-operated in the plan by devoting considerably more time to children's dental care.

CONCLUSIONS AND SUGGESTIONS

1. It would appear from this study that the incidence of new dental decay in the teeth of the masses can be appreciably influenced by a diagnostic and educational program. Such a vital issue deserves continued study in order that economic factors and the efficiency of the methods may be assessed.

2. Upon being notified that their children needed dental care, the majority of the parents in this community accepted the responsibility and sent their children for treatment to private dentists. There was a lesser response for 5 and 6 year old children. This suggests the need to contact pre-school children and their parents if one is to intercept the dental defects accruing before the time the children enter school.

3. The reduction in the proportion of children having one or more lost teeth is accompanied by a reduction in the need for space maintenance and orthodontic treatment.* There was little appreciable increase in the prevalence of space maintainers or orthodontic treatment being done. In the end it may be more practical to reduce the need for these services by preventing tooth loss through earlier fillings of cavities, than to educate people to make use of these relatively expensive after-treatments.

4. The response of the private dentists in the region to the demand for children's dental services indicates the profession is willing to accept its responsibility to the child as well as to the adult patient. This co-operation might be

*The need for orthodontic treatment was based on cuspid and molar relationships, drifting of teeth, and anterior or posterior cross-bites. The simple premature loss of a tooth without the above complication did not cause the child to be classified as an orthodontic case.

strengthened by aiding the private dentists through instruction courses and extending consultative services.

5. The following points are made with reference to the statistical evaluation of dental public health programs.

(a) Information such as was uncovered by this study is of importance to the administration and planning of dental health programs. It might well be compiled centrally by trained personnel or machines to ensure standardization and accuracy. The efficiency could be increased by examining a random sample of the children in detail instead of compiling masses of less precise data.

(b) There is need for better criteria with which to evaluate dental conditions, particularly in the fields of periodontics and orthodontics.

(c) The date of arrival in the community should be known for every child and entered on his dental or health record.

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Letter from Great Britain

The Care of the Handicapped

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Dear Editor,

IN the field of social medicine few steps have yet been taken at once so hesitant and yet so full of promise as that which we have taken in Britain to succour the handicapped.

The term "handicapped" has different meanings in varying situations; in the school child it is measured in terms of education, in the disabled it relates to employment; in public health and hospital terminology it covers a wide range of more or less permanent departures from health of varying degrees of severity; under the National Assistance Act (1948), which was designed to take over the residue of the Poor Law, it concerns '*persons who are blind, deaf or dumb, and other persons who are substantially and permanently handicapped by illness, injury or congenital deformity or such other disabilities as may be prescribed by the Minister of Health.*' Thus the term "handicap" in the sense that I shall be using it in this letter is limited and definite; it covers this last group of "*substantially and permanently*" handicapped. Many of the large group of children who needed special educational treatment at an ordinary or special school will fall outside the boundaries of this definition, either because their handicap is not substantial or because it is not permanent. The maladjusted and the delicate would not normally be considered to have a permanent handicap and those with speech defects and most, if not all, of the partially sighted or partially deaf would not be considered to have substantial handicaps. The educationally subnormal would fall outside for another reason, namely that on leaving school they become the responsibility of the preventive mental health services. On the other hand, some children with considerable physical defects, such as extensive paralysis or other crippling, may not have needed special educational treatment at school, but on leaving school may be considered as "*substantially and permanently*" handicapped.

A similar overlap occurs with those who are registered as disabled persons. The Disabled Persons (Employment) Act in 1944 passed into law a number of the recommendations of the Interdepartmental Committee on the Rehabilitation and Resettlement of Disabled Persons. In particular this Act allows the voluntary registration by the Ministry of Labour of "*a person who, on account of*

injury, disease or congenital deformity is substantially handicapped in obtaining and keeping employment or in undertaking work on his own account of a kind which apart from that injury, disease or deformity, would be suited to his age, experience, and qualification." All employers of more than 20 persons are required to engage (at present) 3% of such disabled persons. A large number of disabled persons, by no means all, can be regarded as substantially and permanently handicapped under the National Assistance Act. Some disabled could not be regarded as permanently afflicted, and others have disabilities which make it difficult for them to obtain employment suited to their normal capacity, but yet do not have "substantial" handicaps. Then again, many of the handicaps in a public health and hospital sense are either not substantial or not permanent; this covers, e.g., probably nine out of ten epileptics and most of the diabetics.

What is the Extent of Substantial and Permanent Handicaps?

The precise content of this category of the permanently and substantially handicapped, apart from the obvious handicaps of blindness and deaf mutism, is, as yet, insufficiently determined. Much careful research is needed before the full scope can be determined. The National Assistance Act (1948) requires the keeping of a Register by all Counties and County Boroughs (who are responsible for administering the provisions of the Act) and this careful compilation, under the supervision of the Medical Officer of Health, must in time help us to see more clearly what is entailed. It is a great criticism of the Poor Law that it should have failed over so many years to compile even the bare bones of a statistical picture of the handicapped. The category of the blind has been enumerated year by year since the Blind Persons Act of 1920 (and the subsequent Act, 1935) made Counties and County Boroughs responsible for blind welfare schemes. The total blind population is estimated at about 87,000, of whom rather under half (36,400) are of working age (16-65). A committee of enquiry has recently estimated the number of substantially and permanently handicapped epileptics at 10,000 (out of a possible 100,000). The Central Association for the Care of Cripples has figures that cover some aspects of crippling. The National Association for the Care of Haemophiliacs is laboriously compiling (under great difficulties) a register of haemophiliacs (their present figure is 500). This slender information only serves to emphasize our general ignorance as to the incidence of substantial and permanent handicaps. We obtain some additional evidence from the figures of the Ministry of Labour as to disabled persons. The total number of disabled persons on the registers of the Ministry of Labour is just under a million, of whom about 42% are classified as suffering from surgical disabilities and about 35% from medical conditions (rheumatism, heart disease and pulmonary tuberculosis); just under 6% from psychiatric disorders and about 17% of blind, deaf and persons with congenital malformations. For reasons already given, the Disabled Persons Register does not coincide with the substantially and permanently handicapped, but it must be looked upon as in some measure comparable.

The Welfare of the Handicapped

The National Assistance Act makes the welfare of the handicapped the responsibility of County and County Borough Councils. These responsibilities

in many instances have been placed within the health department and in others they are carried out by a separate welfare department. In either case it is usual to appoint a welfare officer. The aim is to secure that all handicapped persons should have the greatest chance in the full life of the community. The Ministry of Health can direct that the welfare of any particular category becomes a duty: he has done this for the blind and deaf. The intention is to extend to all classes of handicap the kind of arrangement already made for the blind, which includes home visiting, social recreation centres, provision of social amenities, and the teaching of Braille and handicrafts. The provisions of the Act cover an advice service, the setting up of arrangements for recreation and social intercourse; establishment of hostels for those employed in sheltered workshops or in work provided under the Disabled Persons (Employment) Act; "home worker" schemes and assistance in marketing produce. The handicapped person must be integrated socially and economically into the community life. Welfare provisions which the local authority can make are designed to meet both these needs to the full. The work involved must obviously vary with the many different types of handicapped persons, but in general it falls under two headings, the social (or socio-medical) and the problem of employment.

The social aspects of this work must include the ascertainment of the existence and the needs of handicapped persons; visiting in their homes or in residential accommodation; instruction in methods to overcome the effects of disabilities; instruction in handicrafts; advice on services available to them; the organization of social centres and classes and other recreational facilities; the recruitment of voluntary workers. Social workers within this field now exist for the blind and partially sighted in the form of home teachers, most of whom hold the qualification of the College of Teachers for the Blind; as the work expands to cover the whole group of handicapped, comparable arrangements for the social work involved will need to be made. As so often happens in Britain when new services are developed which include the visiting of individuals in their own homes, there is a tendency to appoint separate visitors. In the case of the new welfare services for the handicapped, there is an obvious danger that this same process will be repeated. The fundamental consideration of the handicapped person as a member of a family unit may be overlooked. In relation to the family unit all visits for normal (as distinct from special) socio-medical reasons should be done by a basic health worker. A specialist worker for giving advice on handicrafts and methods to overcome disabilities will be needed for many of the different types of handicapped persons, just as a special visitor is needed to teach Braille or teach the mental defective; the rest of the social work could be done by health visitors with adequate provision made in their training. This would have the advantage of helping to bridge the gap between the welfare services for the handicapped and other health provisions, particularly those of the family doctor and the health department. There can be no doubt that the handicapped as a class will present many health problems and in general will need to be much more closely associated with the health services than has been necessary with the blind. The epileptics and the chronic sick give evidence of this need.

The problem of employment is one which has to be considered in conjunction with rehabilitation and the activities of the Ministry of Labour for disabled persons. Preparatory therapy and training in hospital for those who are likely

to make good in normal work can be followed by industrial rehabilitation at a Ministry of Labour Rehabilitation Centre. Those permanently and substantially handicapped, who are able to enter normal employment, are then aided by the disabled quota imposed by the Disabled Persons (Employment) Act, 1944; others can enter "Remploi" factories, of which about 90 exist, employing about 6,000 disabled (established by the Disabled Persons Employment Corporation set up by the Ministry of Labour) or sheltered workshops established by the local authority, where they can work at their own pace and be assured of a living wage. For those who cannot go out to work the local authority can organize "home worker" schemes and make arrangements to market produce. Disablement resettlement officers with a detailed knowledge of the facilities in each area have been employed since 1941 to advise all in need of guidance. The Welfare Officer and the D.R.O. should work in close collaboration. To overcome the obvious difficulty of accommodation for the handicapped, the local authority can set up hostels where handicapped persons can live and from which they can go to work in Remploi factories and sheltered workshops. This overall cover, designed to convert the total body of the handicapped to the maximum possible extent, into economically sufficient units (with all that this implies in social readjustment) is as yet only at a beginning.

An Experiment in Nutrition Education

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IN British Columbia we have been experimenting with a method of nutrition education for school children. This report of our experiences and observations is presented in the hope that it may be helpful to others concerned with nutrition education.

Three years ago, Miss Ross, the Nutrition Consultant for the Metropolitan Health Committee in Vancouver, introduced the rat-feeding experiment into several Vancouver schools. The experiment aroused a great deal of interest among teachers, children, and parents and resulted in considerable publicity throughout the province. The following year, a request was received for a similar type of project in a school of the West Kootenay area. The request was discussed with Dr. Wood of the Animal Nutrition Laboratory, at the University of British Columbia, who offered to provide rats for experiments in any area of the province. It was decided to supply rats through the health units to schools requesting them, but no attempt was made to promote the use of the rat-feeding experiment as a method of nutrition education; in fact, there was some scepticism about the value of this type of project. It was anticipated that there would be numerous problems with regard to transporting the rats and supervising the experiment.

The West Kootenay experiment, which we regarded as a pilot study, was completed in six weeks. Newspapers publicized the experiment throughout the area. As a result, other teachers asked the public health nurse to arrange for the same type of animal-feeding experiment in their school. From this beginning, the project has developed rapidly. During the past school year, local teachers have requested and conducted rat-feeding experiments in over 70 schools outside Vancouver. The rats have travelled by boat to schools on the coast and by plane or train to all areas of British Columbia.

The method of conducting the experiment has been similar to that used in Vancouver schools. During the first four weeks, one pair of rats is fed the variety of foods recommended in Canada's Food Rules and the other pair receives such foods as soft drinks, white bread, cake and candy. In some schools there has been a variation of these general diets according to the food or meal they wish to stress. For example, sometimes a good and poor breakfast or lunch form the basis of the contrasting diets. By the end of the first four weeks the difference in weight, appearance, and disposition between the two pairs of rats is readily noted

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by the children. The rats on the poor diet are returned to a good diet for a period of approximately two weeks, so that the children can note the improvement that takes place in their weight and appearance. The care of the rats, including feeding and weighing, is the responsibility of the children in the classroom. Usually the experiment is conducted in one classroom, with frequent display and explanation to other classrooms in the school. Although all classes from Grade 1 to Grade 13 have tried this experiment, the largest proportion have been conducted in Grades 4 to 8.

In view of the large number of requests that have been received for the rat-feeding experiment, there has been little doubt as to its popularity. We have been interested, however, in studying the actual value of the experiment as a method of nutrition education. Was it popular mainly because of its novelty or did it really help to stimulate a greater interest in the study of foods? More important, did this interest result in any improvement in food habits?

Although it was possible to observe a number of rat-feeding experiments during visits to health units, the critical comments of public health nurses and teachers, who were on the spot to observe, were considered the most valuable source of information. Both groups were asked to assist in evaluating the effectiveness of the experiment by reporting, at the conclusion of their experiment, on the results obtained in their area. It was requested that their report deal particularly with the relationship between the experiment and the student's interest in health lessons and the effect, if any, on food habits.

Reports have been received from every area where experiments were conducted. Almost every teacher reports that the rat-feeding project has stimulated a greater interest in the study of food and nutrition among the children in the classroom. In most areas, this interest carried over to the parents in the community. The majority of the experiments were displayed at parent-teacher meetings or during parents' day at the school. In some areas the rats were used in exhibits in community store windows. Local newspapers carried stories of the rat-feeding experiments which were written by the children. Public health nurses used the rats as exhibits during discussions with adult groups. Often, the children's comments about the experiment aroused the parents' interest to the point where they made further inquiries from the teacher or public health nurse.

It has been much more difficult to determine the carry-over of this interest to actual improvement of the food habits. In the majority of projects a study of the children's daily meals was carried out either prior to or in conjunction with the rat-feeding experiment. However, in most cases a second study was not repeated after the experiment. Seventy-five per cent of the teachers and public health nurses have reported that there were indications of improvement in the children's own diet as a result of the experiment. Some of their observations may be of interest. For example, one report states: "The stores in this city report an increased sale of whole-grain cereals following the window display." Comments from other reports are: "Observations have shown that brown bread and milk are being used more by pupils. There is a definite carry-over." "The results of our experiment were so clear and outstanding that pupils could not miss the lesson. Parents too were interested in our experiment, and class food habits changed, not only school lunches but every meal." "We observed that more whole wheat bread,

fresh fruits, raw vegetables, and less sweet foods were being brought to school in the children's lunches after the experiment." "Several parents in this district have reported that their children have become interested in breakfast for the first time." "Consumption of candy and pop during the lunch and recess periods has decreased considerably during the experiment."

Similar comments have been received from public health nurses, for example: "Parents of this district were most interested and through their questions I was given a wonderful opportunity to discuss food selection. Some parents were definitely influenced as a result." Another public health nurse has commented: "Parents appreciated the experiment and said it did more to influence the children in their choice of food than anything else." In one area, the rats were taken to a primary school for display at the end of four weeks and it was reported that one child was so impressed that he offered the soft drink included in his lunch to his teacher. It is interesting to note, however, that some teachers and nurses reported that, although they were able to note some improvement in food habits during the experiment, the children tended to go back to their original food habits several weeks later.

About 25 per cent of the teachers reported that, although the experiment aroused interest, they were not able to note any carry-over of this interest to the children's selection of food. This comment was received more often from teachers in the high-school grades. Frequently they concluded their observations by recommending that the experiment be conducted in the elementary grades, where, they felt, the students would be more impressed with the results. It was also noted that with high-school experiments it was important to guide conclusions so that teen-age girls were not left with the assumption that the soft drink-cake diet was suitable for reducing. Some of these reports stated that, although the child had been impressed, his parents were not so greatly influenced, and this was considered a factor in hindering any improvement in food habits.

According to the teachers, few difficulties were encountered in conducting the experiment. Perhaps the commonest difficulty was keeping the rats in a warm place when the experiment was conducted in small schools during the winter months. Special arrangements were necessary in some cases for the care of the rats over the week-end. A few schools found difficulty in obtaining suitable scales for weighing the rats. The chief problem seemed to appear at the conclusion of the experiment when teachers found that the children were very reluctant to return the rats to the Health Unit.

The majority of the teachers have asked to repeat a similar type of experiment in their school during the next school year. If it is possible to continue the projects, it will be recommended that the rats are again provided to only those teachers who request them. Teachers who ask to conduct the experiment are enthusiastic and anxious to make the best use of the project. It will be recommended, again, that a survey of the children's food habits be carried out in conjunction with the experiment so that they are encouraged to apply the experiment to their own food habits. Close guidance and supervision by the teacher is important throughout the experiment. Co-operative planning by teachers, public health and other community workers is recommended, so that the experiment is displayed and explained to parents as well as children.

Although the effectiveness of the rat-feeding experiment as a method of nutrition education has not been thoroughly evaluated, this project is considered worth continuing for several reasons. First, it is doubtful whether any other method of nutrition education has aroused as much general interest in food habits throughout the community. Further, after supervising the experiment, a good many teachers have reported that their own interest in nutrition has increased a great deal. Hence they are much more enthusiastic about teaching nutrition in the classroom. Public health nurses point out that the experiment has provided them with many more opportunities to discuss nutrition with both teachers and parents. Where the experiment is well conducted and tied in closely with the health education in both the school and community, there are indications that actual improvement in food habits may result.

The rat-feeding experiments in British Columbia have been possible only through the excellent co-operation of Dr. Wood and other members of the Animal Nutrition Laboratory at the University. They have shown a continual interest in the projects and have supplied a total of over three hundred white rats to schools throughout the province.

Changes due to the Sixth Revision of the International Statistical Classification of Diseases, Injuries and Causes of Death

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IT is recognized that the introduction of the International Statistical Classification of Diseases, Injuries and Causes of Death (1948)¹ will bring about a break in the comparability of certain mortality statistics because of the following changes:

1. The underlying cause, as stated by the certifying physician, to be selected for primary tabulation and not chosen according to the rules of the Joint Cause Manual.²
2. Specific international rules for selecting the main cause of death if more than one is reported by the physician.
3. The adoption of a single list suitable for classifying morbidity, accidents and mortality statistics.
4. The adoption of a uniform medical certificate of cause of death.

After coding the causes of death according to the new International Statistical Classification^{1, 3} for more than a year in Montreal, it was considered desirable to assess the changes in mortality statistics that might result, and to compare the experience of a Canadian metropolis with that of New York City, as outlined by Erhardt and Weiner.⁴

The best measure of assessing the amount of change due to the Sixth Revision of the International List was to determine a "comparability ratio" for each cause of death; i.e., the ratio of the number of deaths coded by the new classification to the number coded by the old classification.

METHOD OF STUDY

As recommended in the regulations of the World Health Organization (article 19), we began in Montreal to classify all the deaths reported to us on both the old and the new basis, from the first of January, 1950. The new system, which required more time, was possible because since 1945 we had reserved twelve columns for cause-of-death code numbers on our punch card: four columns (1-4) for the underlying cause; four columns (5-8) for complications; and four columns (9-12) for other contributory conditions, or diseases.

Presented before the Vital and Health Statistics Section at the thirty-ninth annual meeting of the Canadian Public Health Association, held in Montreal, May 28-31, 1951. At that time, Dr. Valois was Superintendent and Demographer, Division of Vital Statistics, Department of Health, City of Montreal.

From the beginning of 1950, we coded the underlying cause under the new List in the first four columns and the underlying cause under the old List in the last four columns. The detailed List four-digit subcategories were used for both the old and the new classifications.

Although the Division of Vital Statistics received copies of the new Manual in the fall of 1949, physicians, hospitals, institutions and funeral directors did not receive their instructions, along with the new medical certificate, until July 1950. In that month they were sent a circular letter prepared by Dr. Paul Parrot, the Provincial Demographer, and distributed by us. The new medical certificate of cause of death, however, was quite familiar to our physicians, since the addition of interval between onset and death was the only difference between it and the one which had been in use for the preceding ten years.

Our best means of assessing the willingness with which the physicians accepted the new form and the new rules was the way in which they welcomed our explanations when they were queried over the telephone or by letter about the underlying cause. The fact that we accepted their selection seemed to promote better co-operation on their part. The completeness of their reporting seemed to improve gradually from July to December. It is felt, however, that no matter what means we use to reach the physicians, we can never change their habits suddenly, due to the differences in their education, medical training and background.

Twenty-one per cent of our deaths were certified by the coroner (New York—20%). On most of these certificates, only one cause of death is reported. Of this group, 25% were due to external causes and the balance to natural causes. One out of 6 (1 out of 7 in New York) of the deaths from natural causes was certified by the coroner in Montreal during 1950.

CHANGES IN MORTALITY STATISTICS

The numbers of deaths assigned to certain causes and cause-groups according to the Fifth and Sixth Revisions are set out in Table I. To facilitate comparison, the causes of death are arranged in the same order as in the New York study. Comparability ratios for each cause for the two sets of data are also included.

In the data for the City of Montreal, the principal causes showing fewer deaths under the new classification and assignment procedure, in order, were: nephritis—60%; diabetes—43%; gastritis, duodenitis, enteritis and colitis—17%; hernia and intestinal obstruction—16%; pneumonia—14%, etc.

The following causes show an increase in the number of deaths assigned under the new classification: bronchitis—73%, heart diseases—24%, all other causes—20%, influenza—12%, etc. Some increases such as "other forms of tuberculosis" and "influenza" are not significant, as the number of deaths assigned to them is small.

With few exceptions, the data for the Montreal and New York experience show similar effects in respect of major changes. In general, however, the differences between the two revisions are less marked in the Montreal data.

Illustrations of the differences in assignment of deaths under the Fifth and Sixth Revisions are given in Schedules I to IV. Schedule I gives a detailed analysis of the deaths assigned to "nephritis and nephrosis". Part A gives the

TABLE I

DEATHS IN MONTREAL FOR 1950

Distributed by cause as coded according to the 5th and 6th Revisions of the International Classification and comparability ratio by cause for Montreal and New York (1949)

Cause of Death (Sixth Revision of International List)	6th Revision		5th Revision		Compara- bility ratio	New Old
	List Numbers	Number of deaths	List Numbers	Number of deaths	Montreal 1950	New York 1949
1	2	3	4	5	6	7
All causes		9802		9802	1.00	1.00
Infective and parasitic disease (excluding influenza).....	001-138	484	1-32, 34-44 115b Exc44b	484	1.00	0.94
Tuberculosis (all forms).....	001-019	370	13-22	367	1.01	0.97
Tuberculosis of resp. system....	001-008	332	13	331	1.00	0.97
Tuberculosis, other forms.....	009-019	38	14-22	36	1.06	0.98
Syphilis and its sequelae.....	020-029	76	30	75	1.01	0.68
Infectious diseases commonly arising in intestinal tract.....	040-049	1	1, 2, 4, 5, 27	1	1.00	3.00
Scarlet fever and streptococcal sore throat.....	050-051	0	115b	0	1.00	1.07
Diphtheria.....	055	4	10	4	1.00	1.00
Whooping cough.....	056	6	9	6	1.00	1.00
Meningococcal infections.....	057	1	6	1	1.00	1.00
Poliomyelitis.....	080-081	2	36	2	1.00	1.00
Measles.....	085	11	35	11	1.00	1.00
All other infective and parasitic diseases.....	030-039 052-054 058-074 082-084 086-096 100-117 120-138	14	3, 7, 11, 12 23, 24, 25 26, 28, 29 31, 32, 34 37-44 Except 44b	17	0.82	0.95
Malignant neoplasms.....	140-205	1605	45-55, 44b, 74	1603	1.00	0.96
Benign and unspecified neoplasms....	210-239	19	56-57	21	0.90	1.01
Diabetes mellitus.....	260	176	61	307	0.57	0.45
Rheumatic fever.....	400-402	15	58	15	1.00	1.44
Diseases of the cardiovascular-renal system.....	330-334 410-468 590-594	4711	83, 90-103 130-132	4594	1.03	1.07
Vascular lesions affecting central nervous system.....	330-334	412	83	413	1.00	1.27
Diseases of heart.....	410-443	3594	90-95	2887	1.24	1.07
General arteriosclerosis.....	450	117	97	112	1.04	1.21
Nephritis and nephrosis.....	590-594	429	130-132	1080	0.40	0.30
Pneumonia.....	490-493	367	107-109	429	0.86	1.00
Pneumonia of the newborn.....	763	22				
Influenza.....	480-483	27	33	24	1.12	1.31
Bronchitis.....	500-502	45	106	26	1.73	0.85
Ulcer of stomach and duodenum.....	540-541	39	117	62	0.95	0.88
Appendicitis.....	550-553	33	121	32	1.03	1.01
Hernia and intestinal obstruction....	560-561, 570	61	122	73	0.84	1.11
Gastritis, duodenitis, enteritis and colitis.....	543-571 572, 764	116	119, 120	140	0.83	1.39
Cirrhosis of liver.....	581	83	124	93	0.89	0.89
Hyperplasia of prostate.....	610	35	137	48	0.73	1.11
Complications of pregnancy, child- birth and the puerperium.....	640-652	22				
Congenital malformations.....	750-759	187	140-150	22	1.00	0.93
Certain diseases of early infancy, exc. pneumonia and diarrhea of newborn.....	760-776	577	157 158-161	189 572	0.99 1.01	0.98
Senility without mention of psychosis, ill-defined and unknown causes....	(ex. 763, 764) 780-795 residual	52 598	162, 199, 200 residual	60 500	0.87 1.20	1.02 1.04
All other diseases.....	E810-835	150	170	149	1.01	1.01
Motor Vehicle accidents.....	E800-802	292	169, 171, 195	297	0.98	1.00
All other accidents.....	E840-962					
Suicide.....	E963, 970-979	48	163, 164	47	1.02	1.00
Homicide.....	E964, 965 E980-985	17	165-168	15	1.13	1.00

code numbers under the old and new classifications, the numbers of deaths charged to this cause according to each method, and the comparability ratio. The Montreal comparability ratio of nephritis is 0.40 while that of New York is 0.30. This means that only 40% and 30% of the deaths coded to nephritis under the Fifth Revision were assigned to this cause under the Sixth Revision.

In part B, the deaths assigned to nephritis in both revisions are subtracted from the total coded to this cause under the Fifth Revision. This difference is the gross difference or withdrawals. The net difference is obtained by subtracting the additions from the withdrawals or vice versa. The net difference may show a gain or a loss, depending on whether there are more additions or withdrawals. In this instance, a loss was registered, as there were more deaths withdrawn from the rubric nephritis in the Fifth Revision than deaths added in the Sixth Revision.

SCHEDULE I

MONTREAL 1950

Difference in number of deaths due to Nephritis as coded according to the Fifth and Sixth Revisions.

	5th Revision	6th Revision
A. Code numbers	130-132	590-594
Number of deaths coded	1,080	429
Comparability ratio		0.40
B. Assigned to nephritis (130-132) in 5th Revision		1,080
Assigned to nephritis in both revisions		409
Gross difference (withdrawals)		671
Assigned to nephritis (590-594) in 6th Revision but not in 5th (additions)		20
Net difference (loss)		651
C. Assignments to nephritis in 5th Revision but not in 6th Revision		671
Hypertensive disease		589
With heart and kidney involved	324	
With kidney involvement only	181	
With heart involvement only	68	
Essential malignant hypertension	2	
Other hypertensive disease	14	
Arteriosclerotic heart disease		26
Other heart diseases		20
Bronchopneumonia		3
Cerebral vascular lesions		2
Other diseases		31
Total		671
D. Assignments to nephritis in 6th Revision, but not in 5th Revision		20
Diabetes	11	
Cancer	3	
Cirrhosis of the liver	2	
Other diseases	4	
Total	20	

Part C shows the assignment under the Sixth Revision of the withdrawals coded to nephritis in the Fifth Revision. Finally, in Part D are listed the Fifth Revision assignments of the additional deaths charged to nephritis in the new Revision.

In the Montreal data, 409 deaths, or 38% of the total deaths assigned to nephritis under the Fifth Revision (1,080), were charged to nephritis in both revisions. In the New York study, only 25% were so assigned. But if we compare the net differences of the two cities as percentages of the total deaths coded to nephritis in the Fifth Revision, we find them to be very close: Montreal, 60%;

New York, 61%. This means that the increase in the percentage of withdrawals noted in the Canadian figures (part C) is compensated for, to a large measure, by the decrease in the percentage of additions as shown in part D, when compared with the results of the American experience:

	Montreal	New York
Part B	60%	61%
Part C	62%	75%
Part D	2%	4%

An analysis of diabetes assignments is given in Schedule II and Table II. Under the Fifth Revision, 307 deaths were assigned to this cause, while only 176 were so coded according to the procedure under the Sixth Revision. This leaves a difference of 131 charged to other causes such as hypertensive disease (with or

SCHEDULE II

MONTREAL, 1950

Differences in number of deaths due to Diabetes as coded according to Fifth and Sixth Revisions

	5th Revision	6th Revision
A. Code numbers	61	260
Number of deaths coded	307	176
Comparability ratio		0.57
B. Assigned to diabetes (61) in 5th Revision		307
Assigned to diabetes in both Revisions		176
Gross difference (withdrawals)		131
Assigned to diabetes (260) in 6th Revision but not in 5th (additions)		0
Net difference (loss)		131
C. Assignments to diabetes in 5th Revision but not in 6th Revision		131
Hypertensive disease	56	
With heart involvement	42	
No mention of heart	14	
Arteriosclerotic heart disease	32	
Other heart diseases	13	
Nephritis	12	
Cerebral vascular lesions	11	
Arterial diseases	4	
Bronchopneumonia	3	
Other diseases	0	
Total	131	
D. Assignments to diabetes in 6th Revision but not in 5th Revision		0

TABLE II

PERCENTAGE DECLINE OF DEATHS DUE TO DIABETES AS CODED ACCORDING TO SIXTH REVISION, DISTRIBUTED BY SEX, AGE AND PLACE OF DEATH

Years	Per cent Decline by Sixth Revision				
	1950			1949	1949
Place	City of Montreal			New York City	Metropolitan Life Ins. Co.
Age Group	Total	Males	Females	Total	Total
Under 25	0	..	0	0	..
25-44	20	17	18	24	20
45-64	42	48	46	61	45
65 et plus	45	42	43	60	46
All Ages	43	43	43	59	45

without heart involvement), arteriosclerotic heart disease, nephritis and cerebral vascular lesions and other causes, according to the choice of the underlying cause certified by the physician. This yields a comparability ratio of 0.57 for diabetes, which means that under the new procedure only 57% of the deaths assigned to this disease under the old system of classification were coded to diabetes, or a reduction of 43% in the number of deaths now assigned to this cause. In New York City, 45% were assigned to diabetes in 1949, which is equivalent to a reduction of 55%⁴. The City of Baltimore in 1949 had a reduction of slightly over 50%⁵, while the Metropolitan Life Insurance Company, without the New York City cases, computed a reduction of 45% in the first four months of 1946⁶. From a 10% sample for the month of January 1949, the whole of the United States showed a reduction of 44% for diabetes under the new system of classification.

The Montreal figure of 43% came very close to that of the Metropolitan Life Insurance Company (data largely representative of urban areas) and the nationwide sample of the United States, with a variation of 12% from the New York figure. If we assess these changes by age and sex (Table II), we see that no differences were recorded, that over 25 and under 45 the percentage decline reaches 20%, with no significant change among either sex. Above 45 the percentage decline varies from 42 to 45, with slight differences between the sexes.

By sex and age, our data are practically identical with the results computed by Herbert H. Marks of the Metropolitan Life Insurance Company, while they are below those of New York City from 45 years of age and upwards. However, Carl L. Erhardt claims that part of their percentage is due to some inconsistencies in coding practice that were corrected about the middle of the year.

Analysis of the heart diseases (Table I) shows that Montreal's and New York's comparability ratio both showed a gain instead of the loss shown by the two previous causes: 1.24 and 1.07, respectively. The difference between the two ratios seems significant and warrants an explanation. When the heart diseases are grouped with cerebral vascular lesions, arteriosclerosis, nephritis and nephrosis, as the diseases of the cardiovascular-renal system, the comparability ratios are very similar: 1.03 against 1.07.

Coronary diseases alone (Schedule III) show a considerable degree of change. This group includes arteriosclerotic heart disease and angina pectoris. The comparability ratio for coronary diseases is 1.24, which means a 24% rise in the number of deaths coded to this cause. A large proportion of the deaths assigned to this cause under the Fifth Revision were assigned thereto in the Sixth Revision (146 out of 991, or 95%). The gain of 251 is the net difference resulting from the subtraction of the 45 withdrawals from the 296 additions. This increase seems to point to the low weight given to this condition in the Joint Cause Manual with regard to the preference given to coronary diseases over hypertensive diseases with heart involvement and other myocardial degenerative diseases in the new classification.

Up to this point we have considered changes which have resulted in a loss or a gain. There are also rubrics where no apparent change has occurred. These changes happen when withdrawals and additions are so evenly balanced that the comparability ratio is 1.00 or close thereto. An illustration of this is provided

SCHEDULE III

MONTREAL, 1950

Differences in number of deaths due to Coronary disease as coded according to the Fifth and Sixth Revisions.

	5th Revision	6th Revision
A. Code numbers	94	420
Number of deaths coded	991	1230
Comparability ratio		1.24
B. Assigned to heart disease involving coronary arteries in 5th Revision		991
Assigned to heart disease involving coronary arteries in both Revisions		946
Gross difference (withdrawals)		45
Assigned to heart disease involving coronary arteries in 6th Revision but not in 5th		296
Net difference (gain)		251
C. Assignments to heart disease involving coronary arteries in 5th Revision but not in 6th		45
Sixth Revision	15	
Assignments { Other myocardial degenerative diseases	9	
{ Digestive system diseases	6	
{ Other heart diseases	15	
{ Other diseases		
Total	45	
D. Assignments to heart disease involving coronary arteries in 6th Revision but not in 5th		296
Fifth Revision	167	
Assignments { Other myocarditis diseases	50	
{ Degenerative myocarditis	28	
{ Diabetes	23	
{ Nephritis	7	
{ Chronic rheumatic heart disease	21	
{ Other diseases		
Total	296	

by cerebral vascular lesions in Schedule IV. Under the old method 413 deaths were coded to this cause, compared with 412 deaths under the new system of classification. However, 42 cases were withdrawn (that is, charged to some other cause in the Sixth Revision), while 41 were added to the total deaths (371) assigned to this title in both revisions.

SCHEDULE IV

MONTREAL, 1950

Differences in number of deaths due to Cerebral Vascular Lesions as coded according to the Fifth and Sixth Revisions

	5th Revision	6th Revision
A. Code numbers	83	330-334
Number of deaths coded	413	412
Comparability ratio		1.00
B. Assigned to cerebral vascular lesions (83) in 5th Revision		413
Assigned to cerebral vascular lesions in both Revisions		371
Gross difference (withdrawals)		42
Assigned to cerebral vascular lesions in 6th Revision but not in 5th (additions) (330-334)		41
Net difference (loss)		1
C. Assignments to cerebral vascular lesions in 5th Revision but not in 6th Revision		42
Sixth Revision	26	
Assignments { Hypertensive disease	13	
{ Arterial diseases	3	
{ Other diseases		
Total	42	
D. Assignments to cerebral vascular lesions in 6th Revision but not in 5th Revision		41
Fifth Revision	11	
Assignments { Diabetes	10	
{ Arteriosclerosis	6	
{ Heart disease	5	
{ Pneumonia	3	
{ Nephritis	3	
{ Cirrhosis of the liver	3	
{ Other diseases	3	
Total	41	

When comparison is made with the New York study, we see that the percentage of the deaths coded to this cause under the Fifth Revision that were also assigned thereto under the Sixth Revision is practically the same: 90% and 92% respectively. The percentages of assignments to this cause are very close: 10% and 8%. But there the similarity ends, for $3\frac{1}{2}$ times more deaths are credited to cerebral vascular lesions by the rules of the new revision and not by the old list, in the American experience. This finding may mean that in Montreal cerebral vascular lesions are reported as the underlying cause less frequently than in New York.

SUMMARY

In spite of the changes outlined above, most of the causes of death listed in Table I (two-thirds, to be exact) will not be disturbed by the new rules, such as "acute infectious diseases", cancer, maternal deaths, congenital malformations, diseases of early infancy, motor-vehicle accidents, etc. The other third, which includes some causes of public health interest, can be estimated for comparative purposes by using the comparability ratio to assess the degree of change that is occurring.

At the end of 1952 we hope to complete this analysis by covering a period of three years (1950-52) and also to compare 1950 with 1952 in order to appraise the reporting of the medical profession and the inconsistencies in our coding practice.

The differences between the New York study and our own may be due to the fact that a smaller proportion of deaths occurs in hospitals in Montreal than in New York (47% in 1950), and only one cause is recorded on a larger percentage of death certificates in Montreal than in New York (55% in 1950).

The inconveniences resulting from the changes in mortality statistics due to the Sixth Revision of the International Classification are largely compensated for by the practical usefulness of the new features of the List. The new revision should bring us one step forward within reach of the goal we are aiming at: accurate mortality statistics on an international level.

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Canadian Journal of Public Health

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SUCCESSFUL PROGRAMS OF IMMUNIZATION

FOR a number of years the Health League of Canada has drawn the attention of citizens in all Provinces to the importance of having children protected against smallpox, diphtheria, and certain other diseases, by immunization. It becomes increasingly difficult to conduct this yearly effort, because the diseases for which immunization is given are no longer a source of fear, and public interest declines with the steadily falling incidence. In spite of the difficulties, the Health League has continued to obtain space in newspapers and magazines for the presentation of information about immunization, and a very helpful contribution is being made. Ideally, such a campaign would not be required, and an annual effort of this kind would be replaced by a continuous program of education. The fact is, however, that there is an increasing tendency to place the emphasis on other aspects of the health department's program and to do less in acquainting the public with the continued necessity of protecting children from these diseases.

Immunization today also concerns adults. In the Armed Services, diphtheria must be considered, and special attention has been given to the problem. It is recognized that, in contrast to the immunization of children, the immunization of adults presents a serious problem, since severe reactions may occur. Some persons are sensitive to the proteins of the diphtheria bacillus, and such persons can be identified by performing a diphtheria reaction test, with a suitable control test. The necessity for a preliminary reaction test, which involves extra work, led in Canada to the development of an antigen which could be given without preliminary testing. Through studies supported by the Defence Research Board, in which the laboratory work was conducted by Dr. P. J. Moloney and his associates, diphtheria antigen in highly purified form has been combined with typhoid-paratyphoid vaccine and tetanus toxoid. This product has been designated TABTD, and its preparation marks an important contribution to the protection of troops. It is of interest to recall that the Canadian Army adopted the use of a combined vaccine containing typhoid-paratyphoid vaccine and tetanus toxoid shortly after the outbreak of World War II, following the studies of P. A. T. Sneath, D. T. Fraser, M. H. Brown and M. D. Orr in the Connaught Medical

Research Laboratories. The preparation of the combined vaccine was based on the use, in the French Army, of vaccines containing several antigens. The success of the combined vaccine in the Canadian Army, as evidenced by a remarkable absence of tetanus among the wounded, established the use of this vaccine as routine. The addition, recently, of diphtheria antigen constitutes a further step in immunization, and the menace of diphtheria among the troops has been lessened by this vaccine. The substantial reduction in the number of injections required, through the use of combined antigens, has constituted an important saving in time and money.

The use in young children of a triple antigen, containing *H. pertussis*, tetanus toxoid and diphtheria toxoid, is general throughout Canada. Studies of the antitoxin response both of tetanus and diphtheria have indicated that the combined vaccine gives greater protection than that afforded by the injection of similar quantities of diphtheria and tetanus toxoid without the pertussis organisms. It has been known for some years that the use of an adjuvant, such as alum, tapioca or bacterial protein, increases the antitoxin response. Two doses of diphtheria or tetanus toxoid containing alum, followed by a recall dose, will produce antitoxin levels equal to those produced by three doses and a recall dose of toxoid without alum. Further advances have been made and antigens are prepared which are adsorbed on aluminium phosphate, the latter being preferred to alum. Two doses of diphtheria and tetanus toxoid with aluminium phosphate, followed by a recall dose, constitutes a highly effective method of immunization against diphtheria and tetanus.

The extremely low incidence of diphtheria and the absence of carriers, as shown in recent carrier studies, increases the necessity for recall doses of diphtheria toxoid. Formerly, contact with the disease resulted in effective secondary stimulation of immunity, but now protection must be maintained by properly spaced "booster" doses. It is essential, therefore, that the public should be kept reminded of the necessity for continuing the immunization procedures relating to diphtheria at least until the early adult years.

Tetanus toxoid affords protection against lockjaw. Satisfactory blood titres of tetanus antitoxin are obtained following the administration of various preparations containing tetanus toxoid. An unsolved problem, and a very practical one, concerns the finding of some way of permanently marking individuals who have received tetanus toxoid in order that, at the time of any accident requiring the administration of a tetanus prophylactic, tetanus toxoid may be given instead of tetanus antitoxin. It is customary in emergencies to employ tetanus antitoxin. In approximately ten per cent of persons receiving antitoxin, urticaria and other manifestations of late serum sickness may occur. Unless it is known that the injured person previously received tetanus toxoid, it is necessary to administer tetanus antitoxin. As a solution to the problem, the suggestion has been made that some system of tattooing might be considered.

Smallpox is a world-wide problem. Today, with the close contact afforded by air travel with the Orient and other regions where smallpox is endemic, smallpox may occur at any time, in spite of the efforts of quarantine authorities. Smallpox has been controlled by vaccination, and so effectively that the medical profession is not clinically familiar with the disease. The success of vaccination

in controlling smallpox has rendered universal vaccination difficult. Several facts require emphasis. Vaccination in infancy, within the first six months, occasions the minimum reaction and is to be highly commended. In contrast, when vaccination is delayed until young adult life, the individual may suffer several days of indisposition, with fever and a marked local reaction. The technique employed is highly important. Vaccine virus as now supplied is a highly active living virus. The shortest possible scratch, not more than one-sixteenth of an inch, should be made—or a single puncture, if this method is preferred. The multiple-pressure method, widely used in the United States, should be applied in such a manner that a minimum-sized lesion is produced. The importance of the correct interpretation of the reactions following vaccination is not always appreciated. There are few persons, if any, who are not susceptible to vaccine virus unless they have previously suffered from smallpox or vaccinia. Failure to obtain a "take" is, therefore, due to the quality of the vaccine or the technique, or both. In revaccinations it is essential that the patient be seen by the physician on the third day, when the "early reaction" may be noted, which is primarily a reaction of sensitivity and not immunity, and on the fifth day, when an accelerated reaction may be noted. The latter indicates that a degree of immunity is present and has modified the course of the vaccination. The recording of "no reaction" on a certificate is evidence, as stated, of an unsatisfactory vaccination.

Continued protection against smallpox rests, in the final analysis, with the practising physician and the health department. Parents are almost always willing to follow the physician's advice in this matter, and references to the importance of vaccination, made by the health department, will assist the physician in carrying out his responsibilities.

Much has been accomplished in Canada through immunization. The low incidence of the several diseases concerned is rendering more difficult the programs of immunization. Health administrators agree that continued education is essential. Advances are being made in scientific laboratories and are resulting in improvements in the various antigens employed. There does not appear to be a similar improvement in the programs of education by health departments directed toward maintaining public appreciation of the value of immunization.

THE ANNUAL MEETING OF THE ATLANTIC BRANCH

DURING the past two years several of the provincially organized public health associations have been formally established as branches or divisions of the Canadian Public Health Association. This year there have been meetings of the Atlantic Branch in Yarmouth, N.S., the Alberta Public Health Association in Calgary, the Société d'Hygiène et de Médecine Préventive de la Province de Québec in Quebec, and the Manitoba Public Health Association in Winnipeg. In November the Ontario Public Health Association will meet in Toronto and the first meeting of the recently organized New Brunswick—Prince Edward Island Public Health Association will be held in Fredericton. Reports of the various meetings will be published in the Journal. The first of these relates to the meeting of the Atlantic Branch.

On September 2 and 3 almost one hundred physicians, nurses, engineers, and sanitary inspectors met in Yarmouth, for the second annual meeting of the Association's Atlantic Branch, which serves public health workers in the Province of Nova Scotia. For many years the medical health officers met as members of the Nova Scotia Health Officers Association, at the time of the annual meetings of the Nova Scotia Medical Society. Much consideration was given to the proposal to replace the health officers' organization with a branch of the Canadian Public Health Association. By this action, the non-medical members of the public health departments became active members and the work was broadened to include the interests of all engaged in public health services in Nova Scotia.

The 1952 meeting was held at the Lakeside Inn, in the historic town of Yarmouth. It may be recalled that the first use of Jenner's smallpox vaccine was made by Dr. Bond in Yarmouth in 1802, the same year in which the vaccine was employed in Newfoundland and in Quebec City. The morning session on the first day was devoted to a symposium on sanitation and to a consideration of the by-laws of the new organization. The afternoon program provided for a series of papers on public health nursing.

At the dinner session the president of the Branch, Dr. J. E. LeBlanc, of West Pubnico, presided. Greetings were extended by Dr. E. L. Eagles, Divisional Medical Health Officer, Yarmouth; Dr. N. H. Gosse, Chairman of the Council of the Canadian Medical Association; Dr. H. G. Grant, Dean of Dalhousie Medical School; Dr. J. W. Reid, Vice-President of the Nova Scotia Medical Society; the Rev. Père LaPlante, President of St. Anne's University; and Dr. R. D. Defries, representing the Canadian Public Health Association.

The sessions of the second day included papers on nutrition, tuberculosis, cancer, diabetes, maternal hygiene, and hormones in public health. Immediately following the sessions, the Nova Scotia Medical Society convened its ninety-eighth meeting.

Appreciation of the excellent work of Dr. LeBlanc and the other officers—Dr. H. E. Kelly, 1st Vice-President; Miss P. J. Lyttle, R.N., 2nd Vice-President, and Dr. G. G. Simms, secretary-treasurer—was expressed at the dinner session, and these members were unanimously elected to serve for the coming year. At this session also Dr. LeBlanc conveyed to the various bodies represented the desire of the Canadian Public Health Association and its branches to co-operate in every way in the advancement of medicine and public health. Part of his address is presented in the following pages.

Presidential Address

J. E. LEBLANC, M.D.
West Pubnico, Nova Scotia

*President, Atlantic Branch
Canadian Public Health Association*

MY first duty is to thank you for the honour of presiding at this, the second annual meeting of the Atlantic Branch, Canadian Public Health Association. I am deeply sensitive to the fact that there are many men in this town and Province who could fill the chair with far greater ability, ease, and grace than I am capable of. We have a big task before us, one of extreme importance and Canada-wide in its extent, now that we are members of the Canadian Public Health Association. Dr. Defries and Dr. Young, our distinguished guests, confirm this in a most tangible way by their presence tonight. You will have the pleasure of listening to the President in a few moments and will appreciate his valued contribution to our association this year.

My message to you is a very short one—one which has an important bearing on the topics of our agenda and which I find in the small book by Dale Carnegie, "How to Win Friends and Influence People". Here is what he says:

"The University of Chicago and the united Y.M.C.A. schools conducted a survey to determine what adults want to study. That survey cost \$25,000 and took two years. The last part of the survey was made in Meriden, Connecticut. It was taken as a typical American town. Every adult in Meriden was interviewed and requested to answer 156 questions, such as: 'What is your business? or profession? Your education? How do you spend your spare time? What is your income?

Your hobbies? Your ambition? Your problems?'—and so on. That survey revealed that health is the prime interest of people."

You may not agree with Dale Carnegie on this point. The fact remains, however, that the subject of health is a live one, one of extreme importance in these days of war and financial crisis.

When I was a student at Dalhousie University, one of the teachers who made a deep impression upon my mind was Professor David Fraser Harris, of the department of physiology. Not one day of lecturing would pass without some mention of the problems of public health. During his tenure of office, he wrote splendid contributions on the subject.

"Science in our daily life," he said, is simply intelligent living, the greatest need of the community of today. It has added no terror to life, but it has rid us of the terror by night, of the pestilence that walketh in darkness. The night of ignorance is fast coming to an end. The bright dawn of the ampler day of exact knowledge is already bursting on this world."

Mention of the circulation of the blood would cause him to review the whole life of William Harvey and reveal a thousand fascinating facts which would help us to understand the problems of public health.

And it is here that I wish to deliver to you my little message—so often urged upon us by our professor of physiology. It is simply this: *We must do and leave something for the nation.*

Part of an address presented at the second annual meeting of the Atlantic Public Health Association, held at the Lakeside Inn, Yarmouth, Nova Scotia, September 2 and 3, 1952.

"Any physician in any community, however small," he contended, "can make a fundamental discovery in medicine." He would recall Edward Jenner in a little village of Gloucestershire, England, watching, looking, observing, thinking, and concluding that if the milkmaid who got cowpox did not get smallpox, there must be some connection.

Sir James Mackenzie, the founder of modern cardiology, worked as a general practitioner in Burnley, England. Modern cardiology is based on his observation of a few cases in a comparatively small community, examined by the polygraph made by the watchmaker at the corner of the street.

This is enough to stimulate any individual, no matter where he may be placed. Routine practice should not be our only work. We should realize that we have the opportunity of making observations which may be of some help to our fellow-practitioners and to humanity.

Such was the case with John Hunter, the founder of scientific surgery; Louis Pasteur, the father of bacteriology; Lord Lister, the discoverer of asepsis; and Sir Alexander Fleming, the pioneer in the field of antibiotics. All are splendid examples

of what a constructive imagination, experimentation, observation, deduction, and patience can do to alleviate disease.

This was the philosophy of Dr. Fraser Harris, a philosophy well nurtured by the great masters of the past, the classics in literature, the classics in science, classics in medicine, from which he drew precious gems of thought and golden veins of language.

The makers of modern medicine have handed down to us a noble heritage, one we must cherish and preserve. May I quote to you the opinions once expressed by the great statesman, Disraeli? "Public health," he said, "is the foundation upon which reposes the happiness of the people and the power of state. Have the best of kingdoms; give them intelligent citizens, prosperous industries, progressive agriculture. Let the arts flourish; let the architects cover the soil with temples and palaces. To protect all these, have the best of armies and the strongest fleet. If the population remains stagnant, if each year it diminishes in stature and vigour, the nation will perish, and that is why I say the problem of public health is one of the primary concerns of a statesman."

NEWS

British Columbia

MR. KEITH MACDONALD, for the past three years health educator with the Victoria-Esquimalt and Saanich-South Vancouver Island Health Unit, has received a two-year leave of absence to assume a post with the World Health Organization. Mr. MacDonald will leave Victoria at the end of October for Geneva, before going to Kuching, Sarawak, on the Island of Borneo. There he will be attached to a teachers' training college, where he expects to develop a program of training for health educators and a plan of health education for the Sarawak Government's Department of Health and Medical Services.

THREE MEMBERS of the Provincial Department of Health and Welfare, Dr. A. F.

Balkany, Dr. H. T. Lowe and Dr. E. W. Wylde, are enrolled in the course leading to the Diploma in Public Health at the School of Hygiene, University of Toronto. A fourth, Dr. D. A. Clarke, is spending the current scholastic year at Harvard in the course leading to the M.P.H.

FOR THREE DAYS at the end of September all medical health officers in the Province gathered in Victoria for their semi-annual meeting. The sessions were chaired by Dr. G. F. Amyot, Deputy Minister of Health.

TWO NEW STAFF MEMBERS joined the Department of Health and Welfare at the beginning of October. Dr. D. M. Black, previously a private practitioner in Kelowna, became director of the South Okanagan Health Unit, temporarily succeeding Dr.

D. A. Clarke. Miss Lorraine Gadbois joined the Nutrition Service as consultant. Miss Gadbois was previously dietary consultant with the New Brunswick Department of Health. She is a graduate of the University of British Columbia in Home Economics and took commercial dietetics at Henry Morgan & Co. Limited in Montreal. For a year Miss Gadbois was a dietitian at the Nanaimo Indian Hospital. She then took a post-graduate course in dietetics at the Vancouver General Hospital before going to New Brunswick.

Miss M. H. HAZELWOOD, a nursing graduate of Johns Hopkins University and an ex-Wren officer, is now attached to the Health Branch of the Department in the capacity of liaison officer between Civil Defence Health Services, whose committee chairman is Dr. T. H. Patterson of the Health Branch, and the Provincial Civil Defence Office.

Saskatchewan

RESIDENTS of the proposed Regina rural health region will have an opportunity to vote for or against its establishment in a plebiscite to be conducted by the Department of Public Health on November 5, municipal election day. A straight majority will decide whether or not the unit, including 19 towns, 48 villages, and 39 rural municipalities, will be established. The area of the region extends from Belle Plaine in the west to the Manitoba boundary in the east and has a population of more than 76,000. Last autumn and winter, more than 45 local councils petitioned for the health unit, but a dozen counterpetitions prompted the Minister of Public Health to call for a popular vote. The province has offered to bear more than two-thirds of the operating cost, guaranteeing municipalities a ceiling of 50 cents per capita per year in so far as their levies are concerned. The province will also provide and equip the regional health centre. If established, the unit will be the eighth in the province to be set up with the primary purpose of providing public health services to small centres and rural communities.

Dr. S. C. BEST, director of child health for the health department, reviewed the 1952 poliomyelitis epidemic in Saskatchewan at the 45th annual meeting of the Saskatchewan College of Physicians and

Surgeons, held in Regina recently. He estimated that the total notified cases for this year will exceed 1,000 and that paralytic cases comprise about 40 per cent of the total—a drop from the experience of other epidemic years. At the same time there is an unusual number of seriously ill patients. Special measures adopted for the care of acute polio patients include the mobilization of special personnel and equipment at the two main centres of Regina and Saskatoon. Public health nurses have been assigned to active nursing duties. With the cooperation of practising physicians, consultants, departmental officials, and voluntary agencies, the needs of acute cases are being met effectively in small hospitals and in large centres. Plans are proceeding for the management and after-care of almost 350 persons notified as having had paralysis.

THE HEALTH EDUCATION DIVISION'S home safety program, conducted by Mary Gardiner, B.A., B.Ed., a staff health educator, has developed two facets—training of field staff for safety education, which is integrated with other public health work, and community education with emphasis on local action. The cooperation of the Saskatchewan Power Corporation, currently engaged in a rural electrification program, and the provincial fire commissioner has been enlisted. Officers of two provincial federations, the 350 Homemakers Clubs (women's institutes) and the 125 Home and School Associations, have welcomed the project for their organizations.

DURING SASKATOON'S seventieth anniversary celebration, Premier T. C. Douglas laid the cornerstone of the University of Saskatchewan's \$7,000,000 hospital. This 550-bed institution, located on the University campus, is under construction and probably will be completed in 1954. It will operate in conjunction with the University medical school. Part of the construction costs are being borne by the Federal hospital construction grant. Cancer patients are already being treated by the radioactive cobalt therapy unit installed in the cancer wing of the hospital. Aside from its primary task of caring for the sick, the hospital will have three functions: complete training for medical students; medical research, particularly on problems of the prairie region; and continuing professional assistance to graduate medical practitioners.

NATIONAL IMMUNIZATION WEEK was marked in Saskatchewan by an unique radio program for which eight private stations gave public service time. In a widely advertised interview, Dr. F. B. Roth, deputy minister of public health, and Glen Dobbs, renowned playing coach of the Saskatchewan Roughriders, spoke of parental responsibility for the protection of children against preventable communicable diseases. Dr. Roth praised the health program of the State of Texas, birthplace of the football star Glen Dobbs.

DON G. FLURY, B.Ed., health educator in the Prince Albert Health Region, is taking a year's course at the graduate school of public health, University of Michigan, Ann Arbor. His course is being financed by a bursary from the Federal professional training grant.

Manitoba

THE THIRD LABORATORY AND X-RAY Unit of the Manitoba Department of Health and Public Welfare opened on October 1st in the Virden District Hospital, at Virden. This unit, which was made possible through the Federal Health Grants, will supply laboratory and x-ray facilities for all persons in the Virden Health Unit area. Consultant radiologist service will be given, with Dr. J. Campbell in attendance.

NORMAN KERWIN, sanitary inspector, who spent the summer at Lac du Bonnet, has been transferred to the Portage la Prairie Local Health Unit. He is replacing Mr. C. E. McEwan.

THE ENVIRONMENTAL SANITATION SECTION, Division of Health Services, of the Manitoba Department of Health and Public Welfare, is occupying new premises at 320 Sherbrook Street, Winnipeg. These premises were formerly occupied by the Division of Public Welfare Services, which is now at 232 Memorial Boulevard.

MISS MONA McLEOD, senior nurse, is attending Columbia University, where she is taking post-graduate study in public health nursing education and supervision.

ELEVEN NEW PUBLIC health nurses have recently been appointed to the staff of the Manitoba Department of Health and Public Welfare, and posted to local health units throughout the province. They are: Miss J. E. Billings, Miss E. E. Goodman, and Miss M. Mushynski, to Dauphin; Miss A.

Holyk, Miss M. Thompson, and Miss E. Jonsson, to Selkirk; Miss Ann Nickel, to Red River; Miss M. A. Voss, to Northern; Miss S. J. Westdal, to Brandon; Miss H. Thompson, to Virden; and Miss Nora Wilson, to Swan Valley.

SEVEN PUBLIC HEALTH NURSES have been transferred between local health units recently: Miss B. Biron, from Red River to St. Boniface; Miss E. Brown, from the Town of Transcona to Brandon; Miss E. Elder, senior nurse, from Virden to Selkirk; Miss W. Grice, senior nurse, from Kildonan-St. Paul to St. James-St. Vital-Fort Garry; Miss R. Jory, senior nurse, from Swan Valley to Virden; Mrs. M. McKenzie, from St. James-St. Vital-Fort Garry to the Town of Transcona; and Miss B. Warbanski, senior nurse, from St. James-St. Vital-Fort Garry to Kildonan-St. Paul.

Ontario

COPIES of Ontario's recently approved Regulations on Plumbing and Sewers will soon be available for all interested persons. They are now in the hands of the printer. The regulations are designed to protect the home-owners of the province against any dangers to health which could be caused through lack of proper sanitary standards.

THE TWENTY-SEVENTH health unit has been formed in the Province, the Fort William and District Health Unit, with administrative offices in Fort William. The medical officer of health is Dr. P. Wenger, formerly director of the Kenora-Keewatin-Dryden Area Health Unit.

Dr. J. P. WELLS, formerly director of the Prince Edward County Health Unit, has been appointed medical officer of health for the city of Peterborough.

A NEW PAMPHLET entitled "Vegetables for Your Family" has been prepared by the Ontario Department of Health. It gives a list of vegetables available in Ontario and hints concerning preparation and serving. The pamphlet can be obtained from the Department or from medical officers of health throughout the province.

Quebec

SOME FOUR HUNDRED delegates, representing the universities of forty-two countries, took part in the Centenary Celebration of the founding of Laval University, observed September 19-22.

THE TWENTY-SECOND meeting of the Association des Médecins de Langue Française de l'Amérique du Nord was held in Quebec September 23-26. Fifteen hundred physicians were in attendance. Two section meetings on public health were arranged by the members of La Société d'Hygiène et de Médecine Préventive de la Province de Québec, a division of the Canadian Public Health Association.

DR. CYRILLE POMERLEAU, director of the Levis County Health Unit, has been elected president of La Société d'Hygiène et de Médecine Préventive for the coming year, succeeding Dr. C. W. MacMillan, of McGill University.

Nutrition Photographic Contest

THE NUTRITION DIVISION of the Depart-

ment of National Health and Welfare has announced a contest for photographs depicting some phase of nutrition work in Canada. The contest opened on October 1 and will close on December 31, 1952. The prizes will be cash awards, the first \$100 and the second \$50. There will be ten additional prizes of \$10.00 each for the best entry, not already a prize winner, from each province. The contest is open to all Canadian citizens, excluding professional photographers and employees of the Nutrition Division of the Department of National Health and Welfare and their immediate families.

Copies of the rules governing the contest, and an entry blank, may be obtained from the Contest Editor, Nutrition Division, Department of National Health and Welfare, Jackson Building, Ottawa, Ontario.

PROPOSED COURSE IN SANITARY INSPECTION

The Ontario Department of Health, through its Division of Sanitary Engineering, is proposing to organize a nine-months' course in sanitary inspection for students sponsored by local Boards of Health, with the understanding that persons so sponsored will be employed by the sponsoring Board on completion of the course and examinations. The course is scheduled to start in Toronto in January if enough applications are received to warrant its organization.

Training Period Stipend

For candidate with dependents — \$175.00 per month

For candidate with no dependents — \$125.00 per month

Note:—Stipends are in addition to tuition fees.

Qualifications

Junior matriculation plus evidence of job suitability.

The nine months' course will comprise academic studies and field training, after which trainees will write examinations set by the Canadian Public Health Association for the Certificate in Sanitary Inspection (Canada).

Application forms available from the Division of Sanitary Engineering, Ontario Department of Health, Parliament Buildings, Toronto, Ontario.

